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ABSTRACT

This hearing focused on the subject of teacher recruitment and preparation. The hearing began with opening statements by several Congressmen (the Honorable Frank Riggs, Matthew Martinez, William Gooding, George Miller, and Robert Scott). Following the opening statements were statements by the Honorable Eugene Hickock, Secretary of Education, Commonwealth of Pennsylvania; Mr. E.D. Hirsh, Jr., President, Core Knowledge Foundation, Charlottesville, VA; Dr. Eric Hanushek, Director, W. Allen Wallis Institute of Political Economy, University of Rochester, NY; Dr. Richard Ingersoll, Professor of Sociology, University of Georgia, Athens; Ms. C. Emily Feistritzer, President, National Center for Educational Information, Washington, DC; Dr. Dale Ballou, Professor of Economics, University of Massachusetts, MA; Ms. Kati Haycock, President, the Education Trust, Inc., Washington, DC.; Mr. Paul F. Steidler, Director, Alexis de Toqueville Institution, Arlington, VA; and Mr. Barnett Berry, Associate Director for Policy and State Relations, National Commission on Teaching and America's Future, Columbia, SC. Statements and written testimony are appended. The appendixes also include two reports by the National Commission on Teaching and America's Future: (1) "What Matters Most: Teaching for America's Future"; and (2) "Doing What Matters Most: Investing in Quality Teaching." (SM)

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TEACHER PREPARATION INITIATIVES

ED 437 346

HEARING

BEFORE THE

SUBCOMMITTEE ON EARLY CHILDHOOD,
YOUTH AND FAMILIES

OF THE

COMMITTEE ON EDUCATION AND
THE WORKFORCE
HOUSE OF REPRESENTATIVES

ONE HUNDRED FIFTH CONGRESS

SECOND SESSION

HEARING HELD IN WASHINGTON, DC, FEBRUARY 24, 1998

Serial No. 105–77

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TEACHER PREPARATION INITIATIVE

Tuesday, February 24, 1998

House of Representatives,

Subcommittee on Early Childhood,

Youth and Families,

Committee on Education

and the Workforce,

Washington, D.C.

The subcommittee met, pursuant to call, at 10:00 a.m., in Room 2175, Rayburn House Office Building, Hon. Frank Riggs [chairman of the subcommittee] presiding.

Present: Representatives Riggs, Johnson, Goodling, Peterson, Upton, Martinez, Miller, Kildee, Roemer, Scott, and Kucinich.

Staff Present: D'Arcy Philps, Majority Professional Staff Member; Denzel McGuire, Majority Professional Staff Member; Kent Talbert, Majority Professional Staff Member; Sally Lovejoy, Majority Senior Education Policy Advisor; Andrea Weiss, Majority Legislative Assistant; Alex Nock, Minority Legislative Associate; June Harris, Minority Education Policy Advisor; and Margo Huber, Minority Staff Assistant.

Chairman **Riggs**. Good morning. My name is Frank Riggs. I am Chairman of the Subcommittee on Early Childhood, Youth and Families and I call to order this meeting of the subcommittee to hear testimony on the subject of teacher recruitment and preparation. I want to thank my good friend and the Ranking Member of the subcommittee, Congressman Martinez, for calling the subcommittee to order and I want to take the opportunity to welcome each of you to this hearing.

All children in this Nation deserve an education, which provides them with the skills and knowledge necessary to lead a productive and successful adult life. I personally believe that the keys to improving education in America are really fairly simple. The key to education quality is good teachers and an emphasis on the basics. That means a traditional curriculum that emphasizes the core academic subjects, access to and instruction in technology for every child and accountable schools. The best way to hold schools accountable is through State and local control and parental choice.

Renewed attention has been given to another important aspect of ensuring a quality education for our children. I say a renewed attention. I mean back here in Washington. That is the role of that individual, the role and preparation of that individual classroom teacher. I also stipulate, as others on this panel no doubt will, that teaching is the highest calling. I have heard the Speaker of the House, Newt Gingrich, refer to teaching as a missionary occupation. I agree with his observation. I also recall the wonderful saying that a teacher can affect eternity because he or she never knows where his or her influence might end. Specifically, questions have been raised about the quality of our Nation's teacher work force, the quantity of qualified teachers, the adequacy of teacher preparation and the narrow issue of the impact of classroom size on the ability of teachers to teach successfully.

Over the last few months a number of bills have been introduced in Congress that attempt to address these issues. Representative Bill Paxon, a Republican from New York, has introduced legislation that would redirect the funds of several Federal programs to enable States to hire many more new teachers. I also know that some of my colleagues on this subcommittee as well as on the full committee have introduced their own initiatives, including Congressman Miller and Congressman Kildee. The President's 1999 fiscal year budget took this one step further. It took Congressman Paxon's proposal one step further by proposing a multi-billion dollar new program to reduce class size.

Before considering these proposals we must first take a closer look and carefully assess perceived problems. There is truly a shortage of teachers. Does classroom size matter? Are teachers well-qualified and if not, is it because colleges and universities fail to adequately prepare them during the traditional teacher preparation, teacher education at colleges and universities by focusing too much on how to teach while neglecting what to teach? If these in fact are problems, how best should they be addressed? Can teacher shortages be alleviated through alternative certification programs? What effect does teacher tenure have on attracting and keeping good quality teachers? Can classroom sizes be reduced at the local level by shifting administrative positions to teaching positions? Can teacher quality be improved by introducing strong accreditation requirements for teacher colleges and universities as well as tougher tests for teacher certification? And of particular importance to Congress, what is the proper role of the Federal Government, and by extension Federal taxpayers, in crafting and implementing the necessary solutions?

These are some of the questions we have the opportunity to discuss today with our witnesses who are leading experts in this field as well as with State officials, who are on the front lines addressing these issues. Hopefully, we will all come away with a much better sense of not only the problems we face in ensuring a quality education for all of our children but also how best to achieve this goal. It is my hope that we can gather this information in time to consider any action in the area of the teaching profession in the context of reauthorizing the Higher Education Act.

With that, I recognize the Ranking Member of the subcommittee, Congressman Martinez, for any opening statement he would like to make.

SEE APPENDIX A FOR STATEMENT OF MR. RIGGS

Mr. **Martinez**. I am pleased to join with you in welcoming the witnesses before the subcommittee today. The topic of this hearing, as you have outlined, is indeed important. I am very interested in the perspective of the witnesses.

As far as I am concerned, teachers are the cornerstone of our educational system. I think back to my own education, and I can remember teachers who made a difference. If it were not for certain teachers who made me realize my potential, they took me aside and helped me, I would not be here today.

I asked the question about public schools when we started damning public schools and how bad they are. I asked my colleagues how many of you are products of public schools? The overwhelming majority are public school products. So I guess somewhere along the way they have done something right. But clearly the training which teachers receive both in preservice and inservice is vital to the educational achievements of our Nation, especially of our Nation's students.

President Clinton has also realized the vital role of teachers through his proposal to assist local school districts in hiring 100,000 more teachers over the next few years. The brouhaha claimed that 100,000 police officers would make a difference. We found out that they have. Not only that, the local jurisdictions have all been in strong support of that. When we talk about reducing class sizes, I think we are going to realize that if we reduce class size we are going to need more teachers. Another proposal of his is to lower the class size. Of course that is the proposal of our governor in California. It seems a lot of people are jumping on the bandwagon, realizing that the more attention an individual student gets, the better he is going to do. But my hope is that this presents us today with an opportunity to ensure that this new corps of teachers have the tools necessary to positively impact our Nation's students.

In 1996, the National Commission on Teaching and America's Future restarted significant national debates on teacher training and qualifications through its release of "What Matters Most: Teaching for America's Future." This report made bold recommendations for revamping the method used to prepare new teachers and for updating the training and skills of those presently in the profession. The report contained welcome advice for many of us who have struggled with how we can best ensure a high quality, properly prepared teacher work force. We are fortunate to have witnesses from the commission on the second panel today, Mr. Barnett Berry, and I am looking forward to his testimony. I thank you, Mr. Chairman.

SEE APPENDIX B FOR STATEMENT OF MR. MARTINEZ

Chairman **Riggs**. Thank you. The Chairman of the full committee is Bill Goodling. Mr. Chairman, do you have an opening statement you would like to make?

Mr. **Goodling**. Later on I will introduce our Secretary of Education. Mr. Miller and I attended a conference recently where one of the presenters said that the major problem with teacher education is that, I think I am saying this right, teacher education programs on college and university campuses are sort of stepsisters or stepbrothers to all the rest of the programs that happen there. There is not much prestige given to teacher education departments on college campuses.

Of course, when I went to elementary school we were fortunate. The brightest and best women were teachers because they had two choices, either be a teacher or a nurse, if they wanted to be professionals. That is long since gone. That luxury will never return. We have hundreds of thousands of teachers at the present time who are now clerks in department stores and at McDonald's and so on because they can't get a teaching position, primarily because they won't go where the jobs are available. In my district, in some districts there may be 100 applicants for each teaching job. So I suppose if we have any role whatsoever in relationship to teachers, it would be to find some way to encourage them to go where they are needed.

Again, I think it is time we think, as we do in everything, of quality rather than quantity. I will be the first to indicate that I am not quite sure how we go about bringing the brightest and best into the teaching profession. I am almost convinced, after many years, that the good teacher is born. I supervised student teachers. I am not sure that we made much headway in making average teachers outstanding teachers. But I was floored when we had teachers of reading before us on a panel here and they told us they didn't have any courses in how to teach reading at the college and university. One first grade teacher said the only statement made by her professor was, if you can read, you can teach anybody to read.

If that is the kind of problem we have out there, we have a lot of work to do. But again, we have to find a way to attract the brightest and best. It is not that we don't have plenty of teachers and plenty of teachers prepared. But can you turn a youngster on in science and math by the time they get to 6th or 7th grade with a science or math teacher? Yet we ask elementary teachers to teach every course, every subject and in many instances they have had a minimum number of courses in math and science in high school and in many instances none in college. We are dealing with that in the reauthorization of higher education, but we are not sure how we are dealing with it.

Having said that, I will wait to introduce our secretary from Pennsylvania.

Chairman **Riggs**. Maybe some of those individuals should consider moving to California, where our classroom size reduction initiative has created many openings, some being filled on an emergency or temporary basis, for classroom teachers. At this point, colleagues, I would like to move to the first panel of our witnesses.

Is there any other Member seeking recognition of the Chair at this time?

Mr. **Miller**. I just wanted to thank you for holding this hearing. I think it is an important hearing. I think it is a historic hearing. We come at a time when I think most people recognize that we are going to turn over our entire teaching force in the next decade. This is an opportunity to change some of the things that we now know are wrong with the existing system of attracting people, encouraging people to stay, rewarding talent, and holding people accountable. These are all opportunities that we have. Clearly the Federal Government spends a lot of money in compensatory education, and in underwriting the education of people who want to become teachers. I think we have a right to demand some excellence. I think we have a right to hold people accountable. I don't think we should be funding programs for poor children that give them poor teachers. It does not make any sense.

So we may not and we should not be here directing the States how to do all of this, but we certainly have some obligation to put some accountability into a system, which we annually spend billions of dollars on, either in preparing teachers or providing for academic programs.

I have said earlier, and this committee voted out, I think this is a consumer protection issue. I think parents have a right to know who is spending four and five and six hours a day with their children and are those people competent to teach the children and create the ability of the child to learn. There is going to be some discussion on alternative credentialing systems. I think that is quite appropriate. There are many talented people in our community that can lend a very helpful hand in teaching. I witness it every day that I am in schools in my school district. I am there every week. I am visiting with people from the Bank of America, from Chevron, from Shell Oil; I have a lot of refineries in my district. They are there teaching science, computer sciences and programming and all of the rest of it. I don't think we should use alternative credentialing as a way of somehow suggesting that we are going to set up a completely new system.

I think education is important. I think this is an opportunity at the outset of the new century, the new decade, of the new corps of teachers coming on-line to set down some markers about what we think is important. I think what parents think is important, whether they pay attention to it or not, they like their child to spend time with a good competent teacher.

I hope that this hearing will help us struggle with some of our responses. We need to recognize talented people. We need to reward them. We cannot treat all people in this profession as the same, and truly those who strive to enhance their talents and their capabilities to teach our children ought to be rewarded. So there is an awful lot on the table here, but there has never been a more appropriate time to have it on the table than right now when we recognize the kind of change that is going to take place in the teaching corps of this country. I wanted to thank you for holding this hearing.

Chairman **Riggs**. Congressman Scott?

Mr. **Scott**. I know we don't usually have opening statements. I won't trespass on the time. I would like to thank the witnesses for coming. It is an excellent topic to consider and I am looking forward to the witnesses, particularly in line of a difference between knowing, teaching and being able to teach. There is a difference. I look forward to that testimony.

SEE APPENDIX C FOR STATEMENT OF MR. PAYNE

Chairman **Riggs**. Chairman Goodling, would you introduce the first witness please.

Mr. **Goodling**. I would be happy to.

Eugene W. Hickok was nominated by Pennsylvania Governor Tom Ridge in

March of '95 to the post of Secretary of Education and confirmed by the Senate on May 2nd, 1995. He is a Carlislean. That means he comes from Carlisle, in case you didn't follow that. He has been a teacher, a scholar, an author. Since 1980, he has taught Political Science at Dickinson College, and most recently served as Director of the Clarke Center for the Interdisciplinary Study of Contemporary Issues. He was an adjunct professor at the Dickinson School of Law. Widely recognized as an outstanding teacher, he was twice awarded Dickinson's prestigious Ganoe Award for Inspirational Teaching in 1985 and in 1990.

He is an expert on public policy and the U.S. Constitution. He has published scores of articles and books and has testified frequently on a wide range of issues before committees of the U.S. House and Senate and both houses of the Pennsylvania Legislature. I remember him as a school board member, since I was one, not at the same time, I think probably prior to your being a school board member.

Well known as a commentator on local and national media on the issues of government, education and politics, he has been a guest on the ABC News Nightline, C-SPAN and the MacNeil-Lehrer News Hour. Outside the classroom, as I indicated, he did serve as a school board member, and so I am very happy to introduce Secretary Hickok.

Chairman **Riggs**. Mr. Secretary, thank you for being with us. If you would allow me to explain for just a moment our procedural rules, we try to limit testimony by witnesses to 5 minutes. However, I understand that when you have such distinguished experts in the field, it is very, very difficult to do that. However, the lights are there in front of you to sort of guide you in terms of that five-minute time limit. If you could be as concise as possible, that will actually allow us more time for question and answers. I think the Members probably find that give-and-take is as valuable, if not more valuable than your testimony itself. Your entire statement in written form will appear in the record. Thank you for being here. Please proceed.

STATEMENT OF THE HONORABLE EUGENE HICKOK, SECRETARY OF EDUCATION, COMMONWEALTH OF PENNSYLVANIA

Mr. **Hickok**. Thank you, Mr. Chairman. Thank you, Chairman Goodling, for that very kind introduction as well. I appreciate it very much. I come here today as the Secretary of Education for the Commonwealth of Pennsylvania; also a member of the Education Leaders Council, ELC, which is a national organization of reform-minded State education chiefs from Arizona, Florida, Georgia, Michigan, Pennsylvania and Virginia and representatives from a total of 29 other States.

I consider it an honor to be here today to discuss what I consider, as you have all said, a very important issue. And that is: how do we prepare people to become teachers? The fact is teachers spend more time with our kids than we do as parents. I agree with those who argue that it is a mission. It is the highest calling. I am very proud to be a teacher, college professor.

In Pennsylvania we are engaged in an initiative under the leadership of Governor Ridge to produce teachers for the 21st century. It has four basic principles behind it.

First, we want to make sure that we have more challenging admissions standards for our schools of education and entry into a teacher preparation program. Secondly, we want to make sure that we have rigorous academic and curricular standards in those teacher training programs. Third, we want to make sure that we have higher qualifying examination scores for teacher certification in Pennsylvania. And, finally, we want to make sure that there are alternative routes to becoming a teacher than traditional notions of teacher preparation.

A teacher is a student's guide to the world of learning and knowledge. It is simply common sense that a prospective teacher must demonstrate a strong commitment to academic excellence in order to help our young people achieve high standards, standards on which the future of the Commonwealth and indeed the Nation rest. When our recommendations are in place, Pennsylvania will require that candidates for teacher training programs complete at least three semesters of college level general education or liberal arts courses and attain a 3.0 grade point average to be admitted to a teacher training program. That will make Pennsylvania alone among all the States with regard to that particular requirement.

Recognizing that there will always be students of high promise who develop late, our standards will allow institutions to enroll up to 10 percent of the candidates who do not meet this GPA if exceptional circumstances justify admission. But the bottom line is that a teacher must be an example of academic excellence to teach students to achieve excellence.

Now there are those who argue that a 3.0 requirement will lead to grade inflation. We took that into consideration well into our deliberations. As we examined the problem, it was clear to us, at least in Pennsylvania, that the liberal arts programs on which the 3.0 admissions requirement will be based have generally maintained relatively strong academic standards. As we look at our State system of higher education, 14 State-owned universities in Pennsylvania, a system that produces half of our teachers in Pennsylvania, we looked at the analysis and found out that the average grade in an education course in that system is a 3.3. That is an A-minus. The average grade of humanities a 2.8; the average grade of mathematics, 2.3; natural science is 2.5. There are some institutions in which 78 percent of the grades in education classes are A's.

I am a college professor. No one is more concerned about grade inflation than I am and I have seen it my entire career. The fact is this is a national trend as well. According to data collected by the U.S. Department of Education, from '92 to '93 graduates, the average GPA awarded in education courses was 3.4 compared to 2.9 in social sciences and 2.67 in science and engineering. We think by emphasizing a 3.0 in academic disciplines, the liberal arts courses, the core academic disciplines, we will fend off what is already a problem in education schools, which is grade inflation.

Our proposed standards will require prospective secondary education teachers to fulfill the same course requirements as their classmates majoring in a specific discipline. We think this is terribly important. We need to emphasize content for secondary schoolteachers. It has always been the best practice for preparing teachers but many preparing institutions have increased their teaching methods requirements at the expense of content area courses. In the process both have gotten watered down somewhat. We don't want to de-emphasize the importance of pedagogic methods courses, but the fact is if you emphasize content, then when you look at methods you will do it in the right way.

In an analysis of the mathematics requirements at 14 teacher-education programs at public universities in Pennsylvania, we discovered that nearly all of them have less rigorous requirements for secondary education mathematics degrees than for the baccalaureate major. It may sound simplistic but sometimes the message is really simple. You can't teach what you don't know. We think it is terribly important that you emphasize content.

In addition, we are going to raise the scores to become a teacher in Pennsylvania. This is terribly important. I was talking to a colleague a few moments ago. Pennsylvania has a very high pass rate on those scores, but that is because the passing grade is so low. We are raising that as we talk right now. You can score in the bottom percentile on the general knowledge test, the bottom percentile. That means 29 percent of the people taking the test score higher than you and you can still pass it, not just in Pennsylvania but in many States. We are talking about a level of questioning which is relatively simple. To paraphrase, to give you an example, list in chronological order the following, the New Deal, the Great Society, the Korean War, the First World War. There are people who miss that question who teach our children. That is not right. We aim to raise the score.

Finally, we think it is very important, as Congressmen Miller said, that it is possible for people to enter the teaching profession who do not go through the traditional teacher preparation programs. We propose alternative certification to attract the best and the brightest from other areas and other fields to become teachers because we think they have something to offer. As long as they are qualified, it will be a rigorous alternative certification process but we think there should be alternative routes to the classroom as long as those people are qualified.

Finally, we would argue that any national attempt to look at teacher standards and teacher preparation should bear a few things in mind. One, we think it is very important to let the States take the lead in this, with the help of the Federal Government, and we also think that some of the things that are being proposed, in NCATE standards and National Board certification, have some problems. The fact is I know of no study anywhere that tells me that an NCATE-approved teacher preparation program produces better teachers. And that is what we want, better teachers. If there is going to be a Good Housekeeping seal of approval, let us make sure it means something. We are not at all convinced at this point in time that NCATE does. In any event, we think our initiative when in place will help move us in the right direction.

SEE APPENDIX D FOR STATEMENT OF MR. HICKOK

Chairman **Riggs**. Thank you for some provocative testimony. Our next witness is Mr. E. D. Hirsch, Jr., President of the nonprofit organization Core Knowledge Foundation in Charlottesville, Virginia as well as holding a post as university Professor of Education and Humanities at the University of Virginia. He is also the author of numerous books, including the best sellers "Cultural Literacy" and "The Schools We Need and Why We Don't Have Them," which I think should probably be required reading for anyone who wants to serve on this committee. He has also served on numerous advisory boards, including the National Council of Educational Research here. He is here today to provide us with a historical overview of how teachers are prepared to teach and why the system has largely failed.

STATEMENT OF MR. E.D. HIRSCH, JR., PRESIDENT, CORE KNOWLEDGE FOUNDATION, CHARLOTTESVILLE, VIRGINIA

Mr. **Hirsch**. Mr. Chairman, it is a great honor to be here and to be so encouraged by what Secretary Hickok was saying is happening in Pennsylvania. I consider this commentary to be a kind of footnote to that and a support of it. I have been asked to comment on initiatives for improving teacher quality and also reducing class size, but the second is a point that I am leaving to Professor Hanushek. I know the class size issue is complicated, entails a lot of complicated trade-offs and, in my view, is most important in first and second grade, where reading is paramount. But in any case, what I am going to talk to you about is focusing on teacher quality. I think this is a difficult injunction to make. I think it would be unwise to spend any taxpayer money that finds its way into schools of education. Schools of education are currently some of the origins of our problems, not their solution. They should be encouraged to change. More generally, this is even more difficult. I think it is undesirable to channel money to administrative entities that are populated by postgraduates and professors or ex-professors of education, even though I am one myself. They tend to share a self-defeating emphasis on process, as the Secretary has said, rather than on knowledge. And unfortunately, this caveat applies to most State departments of education, most accrediting organizations like NCATE, and many grant-giving organizations like the Education Division of the National Science Foundation. I am told that you recently received good scientific advice about reading, not from the National Science Foundation, which is dominated by the education ideology, but rather from the National Institutes of Health, which sustains a strong connection with mainstream science.

The reason that powerful status quo organizations like education schools and State Departments of Education are perpetuating our problems rather than relieving them is that they are animated by guild slogans rather than by reliable science. Potential dissenters within those organizations are silenced by social pressure to ensure intellectual conformity. All this was said back in 1953 by Arthur Bestor in "Educational Wastelands." Unfortunately, the situation has deteriorated rather than improved.

So I think Congress needs to help the public break this intellectual monopoly. It is not just a structural monopoly. So when you hear slogans like "hands-on instruction" or "critical thinking skills," "rote memorization," "drill and kill," my advice is to harden your hearts and put your hands on your wallets and your purses. In "The Schools We Need," which you so kindly mentioned, I explained how this anti-intellectual monopoly arose and why it persists despite practical failures.

Basically, it persists because sentimental ideas about educating young children came to dominate American thought. Those go back to the 19th century, to romanticism; for example, the notion that children should grow like plants rather than be molded like clay. The term "kindergarten" was imported from German romanticism. It means children garden. That is a garden where children should grow like plants. This idea was contrary to the earlier conception of Jefferson and others that public education should steel children against their natural impulses and should inculcate habits of diligence and rectitude and give everybody enough factual knowledge to govern ourselves. Modern science sides with Jefferson on this. But the bad and the sentimental drove out the good Jeffersonian ideas and these romantic ideas continue to dominate. Elementary schools for many decades have stressed natural growth over so-called artificial writing, drill and kill, reading and arithmetic and so on. The stress on process over content has been a disservice to all of our children, but the gravest disservice has been to disadvantaged children who receive little academic knowledge from their homes and they fall further and further behind.

The urgency of overcoming this romantic, anti-knowledge tradition has led me to make some positive suggestions in my written testimony. Their goal is to give teachers the subject matter knowledge, which they and their students need, as Secretary Hickok pointed out. I suggest ways to encourage alternative teacher certification and what that should entail. I suggest ways to structure State block grants so that they will be controlled by subject matter specialists and citizens rather than purveyors of process. The aim is not to dismantle schools of education but to give them incentives to change. The important goal is to provide teachers with training that mainstream science has shown to work effectively. I also appended some remarks about how to ensure such scientific reliability when you authorize specific programs. Thank you very much.

SEE APPENDIX E FOR STATEMENT OF MR. HIRSCH

Chairman **Riggs**. Thank you, Mr. Hirsch, for even more provocative testimony. We now go to Dr. Eric Hanushek, Director of the W. Allen Wallis Institute of Political Economy at the University of Rochester in New York. Dr. Hanushek came to the University of Rochester in 1978 and has since that time served as both Director of the Public Policy Analysis Program and as Chairman of the Economics Department. Two years prior to his tenure at the University he served as Deputy Director of the Congressional Budget Office. He is here today to discuss his recent research on the shortcomings of the large-scale class size reduction initiatives such as those being proposed by the President and I am assuming the one underway in my home State of California. Thank you for being here. Please proceed.

STATEMENT OF DR. ERIC HANUSHEK, DIRECTOR, W. ALLEN WALLIS INSTITUTE OF POLITICAL ECONOMY, UNIVERSITY OF ROCHESTER, ROCHESTER, NEW YORK

Mr. **Hanushek**. Mr. Chairman, thank you very much for having me here. I commend you on having these hearings about this important issue. As you pointed out, Mr. Chairman, there is this wave of enthusiasm for reducing class size that is sweeping the country. I believe that this wave is terribly misguided. I want to make one simple point in my testimony today. The existing evidence, scientific evidence, that we have indicates that the achievement of a typical student will be unaffected by the reductions in class sizes of the type we have talked about. The most noticeable feature of policies to reduce overall class size will be a dramatic increase in the cost of schooling with no commensurate increase in achievement of students.

I wish to fill in the details of that. I have provided in my testimony a lot more of the evidence. This evidence is sometimes greeted with surprise, but that is a lack of recognition of the fact that we have been reducing class sizes consistently for a long period of time and getting no results from this.

Before I go on, I have to make it clear what my position is on our investment in schooling. I personally believe that it is terribly important for the Nation to invest in our youth and to improve our human capital. This is important to make us competitive internationally and for the well being of our citizens. At the same time just saying that we have to invest in our youth does not mean that we should subscribe to any program that is under the title "Investment in Human Capital" or "Improving Our Schools." That is where I put the class size initiatives that have been proposed, in the category of wasteful investments.

Let me quickly review the various sources of evidence we have on class size and make sure that you understand this. First, we have extensive experience with class size reduction and it has not worked. Between 1950 and 1995, pupil-teacher ratios fell by 35 percent in this Nation. We don't have performance information for that entire period of time. When we start getting performance information on the achievement of students in 1970, under the National Assessment of Educational Progress, we see that our students, 17-year-olds in 1996, according to our latest scores, are performing about where they did in 1970. So these dramatic reductions in class size have done nothing to improve achievement. You cannot explain this away by saying that kids have gotten worse. Even though there is increased poverty of children and fewer one-parent families, there are also more educated parents and smaller families so that this is not a simple explanation. Neither is the constant appeal to special education a way to get around this overall evidence. But there is more evidence.

Second, international evidence suggests no relationship internationally between pupil-teacher ratios and student achievement. We have looked. There are lots of reasons why countries differ, but they also have very widely differing practices of class size and pupil-teacher ratios. And they bear no relationship to international test scores.

Thirdly, there are extensive econometric investigations, which show no relationship between class size and student achievement. Class size is one of the most studied aspects of schools. There have been over 300 estimates of the effects of reduced class size on student achievement. And these studies indicate that you are just as likely to see poorer achievement as better achievement when you reduce class sizes across existing schools. This is obviously a controversial topic and it has been subject to a lot of investigation. The scrutiny that has been given to this does not change one bit the policy conclusions that come from this.

Finally, most of the current discussions of class size today are justified by appeals to Project STAR in Tennessee. The common reference is Project STAR, which was a random assignment experiment in class size reduction in the mid-1980s in Tennessee. The references suggest that they found effects of smaller classes and, therefore, justifies any policies. The STAR experiment put some students in classes of 23 students on average, with or without a teacher's aide, and compared those to students who were in class sizes of 15. The results are in my summary testimony, or in the full testimony.

In the summary testimony there is a picture that shows you what you need to know about Project STAR. It found that in kindergarten, the children in smaller classes did indeed perform better than the children in larger classes. That gap maintained at exactly the same level or almost precisely the same level as kids stayed in small classes, first, second and third grade, or stayed in large classes, first, second and third grade. If in fact class size had any effect on performance after kindergarten, you would expect these performances to diverge, the performance picture would fan out. It does not. Moreover, if you follow the same children and look at their performance through the 6th grade, when they are put back in large classes, you find that they still maintain exactly the same difference. So whether they are in small classes or large classes, any differences there are in kindergarten are maintained. What this says is that perhaps at kindergarten smaller classes are important but that later on it is not. On Project STAR, I should also note quickly that that was a massive reduction of one-third, from 23 to 15 students, which is approximately the reduction in pupil-teacher ratios between 1950 and 1995. There is no evidence that going to smaller numbers such as the 20 in California or 18 that has been proposed by the President will even yield the modest effects of Project STAR.

Let me conclude with two quick points. One is to just reiterate what Chairman Goodling and each of the other Members have said. There is nothing that is as important as quality teachers. In fact, if class size reduction policies are going to have any effect, any positive effect, it will be because we hire better than average teachers, not because of the class sizes per se. If they have a negative effect, it is because we tend to hire worse teachers on average. Unfortunately, there is nothing in the system today that guarantees that we will hire better teachers. While my colleagues will speak on teacher preparation, the current incentive structure in schools does not lead schools to systematically hire the best teachers and to retain the best teachers. This comes back to Congressman Miller's point. Really good teachers, whether they are born to be good teachers or they are trained somehow to be good teachers, we have no incentives to keep them in the classrooms and not the poorer ones.

If you wish to have a real impact on education, to put your mark on education as the U.S. Congress, I would do it in a very different way than through reductions in class size. Instead of legislating from Washington smaller class sizes across the country, I would first try to replicate Project STAR in Tennessee and find out what happens if you randomly assign people to different classes. But more importantly, I would think of experimentation, trials and evaluation of programs that radically change the incentive structures in schools. So that everybody in schools had an incentive to improve the performance of students. So that principals and superintendents had an incentive and the ability to hire better teachers and to get rid of poorer teachers. This would have a much larger impact than a general reduction in class size, which I think will have no impact on student achievement but we will see the cost for some time.

SEE APPENDIX F FOR WRITTEN STATEMENT OF MR. HANUSHEK

Chairman **Riggs**. Thank you. I certainly hope when we get to questions and answers that we will have an opportunity to ask you and the other panelists about this idea of incentive or merit pay for teachers and also the related question of teacher tenure.

Dr. Richard Ingersoll is an Assistant Professor with the Department of Sociology at the University of Georgia. He will discuss current issues surrounding the training and quality of our elementary and secondary teaching work force. Thank you for being here today.

Please proceed with your testimony.

STATEMENT OF DR. RICHARD INGERSOLL, PROFESSOR OF SOCIOLOGY, UNIVERSITY OF GEORGIA, ATHENS, GEORGIA

Mr. **Ingersoll.** Thank you, Mr. Chairman, and Members of the committee for inviting me. Over the last few years I have been doing a great deal of research on problems with the quality and qualifications of our elementary and secondary teaching work force. Today I would like to just very briefly summarize what I have found concerning a very crucial issue, but one which, has been widely misunderstood. That is the phenomenon known as out-of-field teaching, teachers teaching subjects for which they have little education or background.

My interest in this stems from my former experience as a high school teacher. I was a social studies teacher, but it seems like there was hardly a year that went by that I wasn't, in addition to social studies, assigned to teach other subjects, math, special Ed, English, for which I had little background. Needless to say, I found it very challenging to teach things that I did not know. I began to wonder, is this a widespread thing, does this phenomenon go on in other schools? If so, why?

Ultimately, I quit high school teaching and went and got a Ph.D. and got the opportunity to answer these same questions in a large-scale research project using a new large national survey of teachers which has been recently completed by the U.S. Department of Education. My objective in my research was to figure out how many teachers at the high school level and in the core academic subjects do not have even a minimal content subject background in the subject they are assigned to teach. I define minimal as a college minor, which is not a whole lot.

My presumption was that few parents would want their teenagers taking, let us say, 11th grade trigonometry taught by a teacher that didn't have at least a minor and hopefully major in mathematics. It turns out, unfortunately, that indeed millions of our high school students are in this very predicament every year. So for instance, almost a third of high school mathematics teachers do not have a minor or a major in mathematics or related subjects, engineering, physics or even math education. Well over 50 percent of high school history teachers in the country do not have a minor or major in history. Not unexpectedly the media has widely recorded these findings over the last year and a half, but at the same time this problem has been widely misunderstood. The misunderstandings all surround the crucial question of why. Why are so many high schoolteachers teaching subjects for which they have little background?

The conventional wisdom tells us that there are one or two reasons for this problem. The first is that, well, there is a lack of training or education on the part of teachers. Of course the obvious antidote is to upgrade the education and training requirements to become a teacher. The second explanation we hear again and again is that teacher shortages are to blame here. Schools simply often cannot find qualified people to fill their positions so they have to make do. They have to reassign someone from social studies to teach math or have to hire someone underqualified. An antidote to this view usually suggests that we enhance recruitment. But the data clearly suggests that both these views are only partly correct. The data clearly shows that almost all of our teachers in this country have a basic education. Almost all of them have a four-year college degree. Almost all of them have a regular State-approved teaching certificate and indeed almost half of our teachers have a graduate degree, usually a Master's Degree. The source of out-of-field teaching does not lie in a lack of education in the training on the part of teachers. It lies in a lack of fit between what they are trained to do and what they are assigned to do. The lack of fit, the data tell us, is often the result of schools having difficulty filling their--finding suitable people to fill their positions. But these staffing problems are not due to teacher shortages in the conventional sense that there is a lack of willing and able bodies out there to fill positions. No. Rather, the data tells us that the staffing problems are more often due to too many teachers prematurely leaving the occupation. In any given year the vast majority of hiring that goes on is simply to replace people who have left their positions, and the data tells us that most teachers move from or leave their positions for one of two reasons. Either they are dissatisfied with teaching or they would like to pursue another career.

These findings have very important implications for policy. If we want to ensure that all our classrooms have adequately qualified teachers, we need to do more than simply recruit thousands of new teachers and give them all kinds of new training. In plain terms, recruiting thousands of people, giving them a lot of training, while very worthwhile things to do, will not solve the problem if then a lot of those teachers are assigned to teach things other than what they are trained in or if a lot of those teachers leave within a few years.

My main point here is that if we want to ensure that all the classrooms in the country have qualified teachers, we need to recruit, we need to train, but we also need to support adequately managed, properly managed and retain our existing teachers.

Thank you.

SEE APPENDIX G FOR STATEMENT OF MR. INGERSOLL

Chairman **Riggs**. Thank you, doctor. I would like to yield to the Chairman, Mr. Goodling, for any questions he may have. It is now time to proceed to the questions and answers. This is our opportunity to interact with the witnesses.

Mr. **Goodling**. I will start out with my Secretary who I didn't catch totally what you had said, but you indicated that you beefed up dramatically the general education courses for prospective teachers. Would you define what they are? I ask that question simply because I had 90 graduate courses, only one of which helped me be a better English teacher, only one of which helped me be a better history teacher. None of them helped me be a better administrator. When you talk about general education courses, what do you have in mind?

Mr. **Hickok**. Right now, in Pennsylvania anyway, to become a teacher or to be admitted into a teacher preparation program you have to have a C-plus average in your first three semesters of college work. That is taking any courses in any discipline or any field, those first three semesters. Our position will be that you should have a B average, a 3.0 during your first three semesters, and the courses that count in the calculation of that 3.0 should be general education or liberal arts courses. They should be discipline academic core courses as opposed to any courses, for example, in the education school or other places.

Mr. **Goodling**. There could be a lot of education courses.

Mr. **Hickok**. There could be education courses in there. They are supposed to be in the disciplines, not of the education school. So the first three semesters it should be core academic subjects. Liberal arts courses, not education courses. After you are admitted to the teacher preparation program you will be taking some education courses but if you are going to become a secondary school teacher, you still have to take the same courses as majors do in the disciplines you are going to teach.

For example, we know that most math teachers in this country are not math majors. Indeed, they are not math minors. I think Mr. Ingersoll makes a very smart observation. There are lots of reasons for that, but we would like to make sure in Pennsylvania that at least starting out in the 21st century math teachers took the same courses as math majors as well as methods courses.

Mr. **Goodling**. That ties into my question. I was going to ask Dr. Ingersoll, you talked a great deal about preparation as far as secondary teachers are concerned in subject matter. But what are we doing for the elementary teacher in relationship to subject matter? I am even probably more concerned about the beginning experience of students with teachers who really have been trained in mathematics and in science, and so on. Do you have any studies that relate to elementary preparation? You talked a great deal about how they are not teaching in certified areas or they do not have very much background in a subject area. How about the elementary, have you done any study on-

Mr. **Ingersoll**. Well, yes, the vast majority of elementary schoolteachers teach a range of subjects, all of them. There are some pull out classes. There is math and art, and there are some specialists at the elementary level but the vast-

Mr. **Goodling**. Music and art?

Mr. **Ingersoll**. Yes. But the vast majority of elementary schoolteachers, their degree is general elementary. That is what they are certified or licensed in. Of course, how much content knowledge they have in math or in English really varies depending upon the particular State, the particular program's requirements to get that general elementary major. There is a very large variation across the country.

Mr. **Goodling**. Dr. Hanushek, any studies on outstanding teachers with large classes, average teachers with small classes? I guess I am asking that. I have heard so many times about the sister in a parochial school who teaches 50 and does an outstanding job. I don't have any statistics to indicate that is correct, but that is what I have heard all my life.

Mr. **Hanushek**. There are a number of studies. First, the one overwhelming thing that comes from studies is that the quality of the teacher has by far the biggest impact on schools, what goes on. The comparisons of how good a teacher is versus what you can get from changing class size say that selecting high quality teachers is the important thing. These teachers are largely from statistical studies that find good teachers are very effective in both large and small classes. It is not the class size that is causing the difference. It is perhaps, as you say, that they are born to be good teachers. That is, class size, any impact of class size is just so much smaller than the impact of differences in teachers.

Mr. **Goodling**. One last question, Mr. Hirsch. Oftentimes we hear about alternative certification. We know there are a lot of outstanding mathematicians, scientists, and so on, out there. In an undisciplined classroom, if I bring that outstanding mathematician and that outstanding scientist in, how long will they stay if somehow or other something cannot be done about the discipline in the classroom? These are people who are perfectionists. These are people who are outstanding in their field.

I can give an illustration. When I was a guidance counselor, I had an outstanding math teacher in the building. I would go by that classroom. It was bedlam, but all the students up in the front row were very attentive. That is who she talked to. I said, I don't know how you could stand that. She said, I could care less. If they don't want to learn, they can sit back there and do what they want to do. I am teaching to those who want to learn. I am thinking of an outstanding scientist or mathematician that comes in. How will that go?

Mr. **Hirsch**. I think, in any alternative certification program, not only should there be apprentice teaching but there also should be a test. My own belief is that this test should be given to all teachers, not just to those who take the alternative route. Because all teachers should be able to qualify with the subject matter and the pedagogical knowledge they need to manage a classroom, but also to teach math and to teach reading, particularly reading in the elementary schools. And as you heard, teachers are not being given that training right now. So I do see a teacher test governing both classroom knowledge, pedagogical knowledge and subject matter knowledge, as being highly important.

But to come back to your initial question about teacher quality and class size. The best evidence about teacher quality on a large scale is the correlation with SAT scores that teachers had. That is, student outcomes, the actual competencies that students gained seemed to depend more on the average SAT scores of the teachers. SAT scores actually mean general knowledge. The SAT score is basically a vocabulary test, in the verbal anyway, and the general knowledge test. So that fits in again with the need for a general knowledge element on teacher certification tests and an emphasis on content rather than simply on process.

Mr. **Goodling**. Thank you. I think it is an outstanding panel.

Chairman **Riggs**. If I could for just a moment ask a follow-up to that, Mr. Hirsch. Are you referring to research that correlates SAT scores with the particular school districts?

Mr. **Hirsch**. No. I believe it was the Tennessee study, I heard this from Ronald Ferguson. I don't know whether you know it, but the highest correlations that were discovered between pupil outcomes and teacher qualifications were what the teacher made on SAT.

Chairman **Riggs**. Are you suggesting that that is the best barometer or measure of a teacher's effectiveness?

Mr. **Hirsch**. The SAT score is an achievement test. It is not an inherent ability test. It is a test of general knowledge and general vocabulary. What I am saying is to be a good elementary teacher you need to have broad general knowledge, which is what my colleagues here are saying, too.

Chairman **Riggs**. Go ahead.

Mr. **Hanushek**. If I could add on quickly, there have been a number of studies that have looked at either SAT tests of teachers or other measures of teacher achievement and abilities. This is probably a stronger correlate of student achievement than any other measured attribute, but it is still very weak and much inferior to actually observing who is good in the classroom and who is not. We do very badly at guessing beforehand who will do well.

That is what some of the problems with these various certification proposals and training proposals are. They are not very good at ensuring that we have just the best people there. We can do much better if we can observe people after they have been in the classroom and make decisions about who is doing well and who is not.

Chairman **Riggs**. Congressman Martinez.

Mr. **Martinez**. Thank you, Mr. Chairman. I am sorry Mr. Goodling left. I wanted him to clarify the statement about the teacher who taught the first five kids and did not care what the rest of the kids were doing. I wouldn't classify that as a good teacher. I taught in a class when the California Teachers Association challenged legislators to come into the classroom and teach to see what kind of a job it was. I attended a fourth grade class because I thought it would be easy. Ms. Anderson was the teacher there. I soon found out how difficult it really is and that some people are suited to it and other people are not. I would say Barbara Anderson taught me one thing that her role was to teach every kid in that class even though she had a large class. Her one complaint to me was, I wish I had fewer students because I can teach well, but it is hard for me to get to all of the students in that period of time. Which would lead me to my first question of Dr. Hanushek, because much of your testimony dealt with saying that reduction in class size was not necessarily a criteria for improved student learning ability. I think what you were saying is that, or I would like to believe you were saying that just reducing class size by itself may not be enough. But what the President is suggesting is that along with the smaller class size you provide good teachers. In the studies you referred to, when you reduced the class size--I understand if you reduce it by 35 percent--let us say you have a class of 40, reducing it to somewhere around 30 or 24, the fact is that that reduction in itself may not be the golden number. I don't know what is, 12, 15, in order to give a teacher time to get around to every student. And then of course if the teacher is not a good qualified teacher, if she got around to every student, she is still not going to teach them, especially if they are teaching out of field, as Dr. Ingersoll has suggested so many teachers are doing.

So let me ask you, in that study did they look at the quality of the teacher? If you just reduce the size with the same teacher and the teacher was not teaching before, she is not going to teach afterwards. Was it looked at in the class size where you say you reduced, was the teacher looked at to see if along with reducing the size you improved the quality of the teacher?

Mr. **Hanushek**. What I tried to do is review studies from a wide range of different sources, some of which do a fairly sophisticated job at measuring the quality of the teacher at the same time. What we find is that no matter how you cut it, the class size within the feasible ranges that we are talking about of, say, 15 to 40 do not have any systematic effect on student achievement. I think it is important to be very clear about this. My own personal belief is that there are some teachers, some groups of students and some classes for which smaller classes could be very, very beneficial. It is just that there are a large number of other teachers, other groups of students in other classes for which it has no impact and for which reducing class sizes across the board, as these general policies call for, are very inefficient and ineffective. If we could in fact reduce class size where it was important, that would be one thing. We do not know how to identify that.

Project STAR in Tennessee, this massive experiment that took class sizes from 23 students to 15, one-third reduction in class size, also looked at what teachers did in the classroom. The average teacher in Tennessee in this experiment did not do anything different with the smaller classes than the large classes. So if in some way you could insist that teachers did something different or you trained them perhaps you could do it. But alternatively, if you had a system that rewarded good performance and got principals to decide which teachers were particularly good with small groups of students and assigned them to them and let other classes be larger to compensate for the cost, I think we would be much further ahead.

Mr. **Martinez**. Sounds like a good idea. Let me ask the question of all of you, are any of you familiar with Jamie Escalante?

Mr. **Hanushek**. Yes.

Mr. **Martinez**. He was an alternative credentialed teacher. He was an engineer before he went to teach. His class size was about 20. He took 20 students and taught them advanced calculus in a school that nobody thought these students could achieve. But because of his personal attention with each student and the size that he could manage, he did something that was quite remarkable. Every one of these students passed the college exam for advanced calculus. Of course, it surprised so many people they accused the children of cheating. And they did not cheat and all but one retook the test and did better than the first time. And the one, on principle, did not take the test on principle because he didn't like being accused of cheating. So here is an example of a small class size with a teacher who understood the subject matter he was teaching, was successful in an area where success was not deemed possible.

Mr. **Hanushek**. The problem is that you have trouble distinguishing between what are the effects of smaller classes per se and what are the effects of Jamie Escalante. That is what the research has attempted to do, separate out those effects. The research has found that the separate effects of class size, when done in an overall way, which California has been doing and which the President has proposed, and which a number of States have also followed, you should not expect any average achievement gains. There will be some classes that gain, the Jamie Escalante classes, and there will be other classes that don't gain or maybe get worse.

Mr. **Martinez**. I think the coupling of the two is probably the key.

We may leave the record open so that we might, through written communication, get some of the answers to the other questions I have.

Mr. **Peterson**. [Presiding] I am Congressman Peterson, temporarily chairing for Congressman Riggs. It is my turn, so next will be Congressman Miller. I come from a retail business background for 26 years, plus State government background. But in the food business that I was in, your consumers drove change. I know we are never going to have that same competitive force. If my prices were not competitive, if my service was not good, if my products were not fresh, I lost business. They went somewhere else. We cannot bring that same competitive force, but I think we have some potential for evaluation from our customers that we totally pass by.

I want to ask you all, any one of you that want to respond, three questions. Peer review, teachers that I know in my system close to home, where my grandchildren go to school, know who the good teachers are and who the bad teachers are. Students know. Some of them, second generation, know who the good teachers are and who the bad teachers are. Maybe I shouldn't use poor teachers. Also the colleges know which schools are better preparing students for college.

So what would be wrong with saying, let us ask teachers anonymously, do a report every year, peer review, evaluating their peers and evaluating the principals and superintendents? That is done in all kinds of businesses. So now we have some, after

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three or four years, we would know, gee, Joe or Sue doesn't get a very good review. We need to work with them. What about student and parent review? What is wrong with that? Why can't--even if we went to the upper 50 percent or 25 percent, the best students, every student that comes in my congressional office I ask them to evaluate their education. They tell me all kinds of things. They tell me who the good teachers are and who are the ones that make class so interesting they look forward to going there. How about asking our colleges? Every time I sit down with a group of college professors, they complain to me that they are having to give more and more remedial courses for the students to meet the entrance level. That is measurable. We could have that measured and we would know which high schools have the least remedial education needed. It becomes a public record. They change. Anyone want to respond to those three issues?

Mr. **Hanushek**. I would certainly support the general view that we have to evaluate people more. It is also my impression, backed up by some research, not extensive research that everybody does in fact know who the good teachers are, the really good teachers and the really bad teachers, in a school. We are--currently we have no structure, no system in place to act on that knowledge. We could think of perhaps a peer review or other review processes. We know very little about how to structure those to maintain fairness, to get people to respond honestly to their review and, if it really counts, whether people change their position. That would be in line, I must say, with my general appeal to you. If you want to radically change education, think about a series of experimental contracts with things like peer review or other things akin to the experiments that the Federal Government did in the '60s and '70s in which we learned a lot. Or akin to what the practice of medicine bases most of its information on. You could in fact try to find out if we can put those systems in place. There is a lot of concern that it would not be fair, and in a lot of places it is prohibited by the contract.

Mr. **Hickok**. If I could comment briefly, I think your observation about coming from business and looking at education and the lack of competitiveness is a very important one. I think peer review is one of many things we should be doing. The fact is that the teaching profession is one of the last in the country where you can enter it at age 21, or whatever, and after two or three years, three years in Pennsylvania of effective teaching, you are guaranteed your job for the rest of your life. The evaluation process becomes a nonissue. People respond to incentives. If there are ways to provide incentives so you attract the best to the profession and then incentives to evaluate them in that profession and to improve their performance as they remain in that profession, then you are building a better school and a better education.

Right now most of education, I would include higher education, suffers from the lack of any kind of a bottom line. Peer review is a way to introduce that. I think you have to do other things in addition to that, but you need to find ways to hold teachers as well as students and, I would argue, professors accountable. We do not do a very good job of that in this country.

Mr. **Ingersoll**. I want to respond to your idea about having students evaluate teachers. As a college professor, I get evaluated by my students every course. All the professors do. And it definitely has an impact on our annual progress. I generally think it is a good idea, but sometimes I am a little uneasy. Some students could retaliate if they did not like that I gave them a D, for instance, and I think this problem could be even worse at the high school and elementary school level. A high school teacher is not just teaching content, they are also teaching behavior. These days they are doing a lot more of it. Student discipline is a real live problem. Getting evaluated by the same students that you had to discipline, that could lead to some unfairness. I would be very nervous as a high school teacher thinking that my job is on the line depending on how my students evaluated me. It may be another source of information. It certainly should not be the sole one.

I think the analogies with business may hold up. I suspect most retail businesses do not have employees evaluate management. Maybe sometimes. Do employees evaluate supervisors and could problems creep up with that? I just think that, I think it would be something that should be thought through very carefully, having students in high school, teenagers, evaluate their teachers and this having an effect on those teachers' careers.

Mr. **Peterson**. I would think it would be the heaviest weight, but I think there would be some average. Maybe if you went to the top 25 percent and got the privilege of evaluating their teachers, these are the brightest kids who are on their way someplace. I want to follow up one more quick point.

Teachers and students tell me in most schools that they are seldom evaluated. Years will go by where a superintendent or a principal does not sit in that classroom, years. So if you have a teacher, and I want to take back the word "bad teacher," but a teacher that is not relating to the student well. They may have the knowledge, they may have been taught to teach, but they just have not learned the skill of relating to students and exciting students. If you don't evaluate, if nobody is in a classroom for four years and a teacher has slid into a bad habit and is kind of coasting on, those students are being shortchanged.

It just seems amazing that in the majority of schools nobody is observing teachers. You could have an excellent teacher who has developed an excellent skill that could be spread throughout the school, and that is not used either. You are wasting someone who has really developed a new technique and it is wasted. The other thing was the alternative Ed. Teachers tell me when you have more than three or four troubled students it is very difficult to teach. I think that is a whole other issue.

Mr. **Hirsch**. Mr. Chairman, I think I forgot what I wanted to say because you changed the subject. I want to go back to the general issue of why smaller class size works in some cases and why it does not work in others and why it works in some countries who have large classes and not so much in the United States. That is because--for one thing just take the issue of social promotion, which is rampant in the United States. That means that you have a lot of children in an individual class that have greatly diverse preparation for being in that class and a great range of readiness to learn. That makes it very difficult to teach the whole class effectively in an interactive way. Yet that is the optimal way to teach that group. But if you cannot do it because of a really impossible range of preparation, then you have to have either class sizes or small groups, which means that for a large part of the time many of those students are being neglected, which is why the performance as a whole is not very good.

So it does seem to me that the whole issue is a much more complex one that relates to how we make sure that every child enters a class ready to learn what that class has to offer, which is a much more fundamental issue than the structural one of class size.

Mr. **Peterson**. Thank you.

Congressman Miller.

Mr. **Miller**. I thank the panel for their testimony. I hope we will have a second round. Right now Secretary Hickok, I want to commend you for the changes that you outlined to us with respect to your schools of education and your new requirements. I think it is terribly important that we start to look at that kind of content.

One, are you considering class size reduction in Pennsylvania?

Mr. **Hickok**. We are talking about it like I think everybody is talking about it. I think Pennsylvania probably has some great challenges in that area. My sense of it, I would share the observations made by Dr. Hanushek. I think it is not a silver bullet. I can think of outstanding examples of teaching in large classes and some pretty poor teaching in small classes. We are looking at it, but it is going to be a debate.

Mr. **Miller**. I assume you would not want us to mandate it from the Federal level?

Mr. **Hickok**. No.

Mr. **Miller**. I just wanted to get that on the record, since I am not sure we should either. I am not sure that makes any sense. It is a very expensive proposition. We have done it in California and now of course politically, because it was popular in grades 1 through 3, we decided that 4 would be better and 5 may be great. I think it does raise serious questions because it does get back to the core subject that was brought up here earlier.

I think it is important, but I think you have to do these other things with it. If you just have a poor teacher spending more time with the students, that is no good. It is like lengthening the school day. If they spend more time with a bad teacher, then I am not sure we have done a great deal. But I want to come back to that on the other round. I was interested in your remarks on NCATE at the end of your statement, if you could elaborate on that. Obviously a lot of States are buying into that. A lot of local jurisdictions are providing incentives for teachers to participate in this process, but you seem to have a little bit different take on it.

Mr. **Hickok**. I think that there has been a lot of talk about NCATE, a lot of talk about National Board certification of teachers. As I understand, the President has talked about that. We have looked at both of those things. I am not saying they are not good things, but the fact is, I don't know where the evidence is that relates National Board certification or NCATE-accredited programming to, again, an educational bottom line producing better teachers. It is as though we think it is a good idea and we want to see the accreditation there, but we don't know why. I have asked my colleges of education that very question. I still have not received any kind of data that suggests to me that there is a relationship.

Mr. **Miller**. What do you think is going on there? One of the arguments for it is that it is not just certification, but a process of evaluating how you are teaching and a self-analysis of what is transpiring in your classroom, and that this is in fact a very valuable process. It seems to me a very expensive way to get that process accomplished. And then I wonder if it is not a way to get some demarcation, so you could justify paying this individual more because they have gone through this rigorous process. I don't quite know what is going on.

Mr. **Hickok**. I think part of it is process, the notion that you look at the curriculum, you look at the courses, you look at the placement. I am trying to figure out what the relationship is between all those processes and the substance of producing a content rich teacher. I don't see that relationship.

The other thing I would argue is that I think one of the reasons there is more and more talk about this is, and I will let others speak about this, is that it is a profession. Most professions police themselves. And hence the teaching profession should police itself. State departments of education should not do it. The Federal Government should not do it. Teachers should do it through these various organizations. I have no problem with that. But I think this is a very unique profession.

In a democracy, teachers sit at the very heart of the creation of good citizens. It is not enough for this profession to police itself. It is very important for the citizens, for the parents, for the taxpayers, for the employers to have a role in policing that profession because they are the ones who in the end have the most at stake, the parents and students and future citizens. So my concern is not that NCATE is bad. There are many NCATE institutions in Pennsylvania. It is not enough. We should always have a higher standard that reflects the particular needs we feel of the citizens of Pennsylvania.

Mr. **Miller**. Good answer. Let me ask another question. I alluded to it in my opening statement. That is, I think we put forth about almost $2 billion for students who are engaged in schools of education and getting a credential. And it has been testified here and is now nationally a discussion that we did not have over the past decade. These schools are pretty deplorable in terms of the product that they turn out, not that these are bad people but this is a lousy education for matching you with the classroom. Do we not have a right to insist on some minimal standards here when we are putting $2 billion into a system? You can walk through the history of mathematics as opposed to basic math or algebra, or what have you, that that suffices to make you an elementary teacher so you can teach math at third, fourth, fifth, sixth grade levels. I consider it a fraud in very harsh terms, that there is a fraud being perpetrated here. We are financing a big chunk of it.

Mr. **Hickok**. I have to agree with you in large part. I think that there is lots of talk in this country about higher standards for students. There is talk about a national test for students. But at the same time we are talking about that, we certainly should be talking about that for teachers, not just preparing teachers but also teachers who are in service.

Mr. **Miller**. This is obviously an ideological debate, the Federal Government coming in and setting some standards, but then again we are putting up $2 billion in the system. It is your system. There is the State system in California, Pennsylvania, what have you, it is the schools of education, but we are financing a big chunk of that education. How do we get those? What do we demand? Do we demand it from you as the Secretary or from the State? Is there some minimal certification that you are going to have once the system is in place? What about Pennsylvania or somebody else, who is trying to improve the system? Or do we just keep funding those States that don't want to do anything with their schools of education?

Mr. **Hickok**. I think the Federal Government has every right and good reason to demand the Department of Education in Pennsylvania and the counterparts in the other States that if they are involved with certifying teacher preparation programs and certifying teachers they are about quality control, and they have some rigorous standards. We owe it to our citizens to make sure we do that. I would also say that perhaps what you might want to think about doing, as opposed to just having those standards out there with Federal funds, as Dr. Hirsch mentioned, talk about alternative approaches to preparing teachers and perhaps do not drive so much money to the schools of education. Drive it directly to those young people who want to become teachers but are thinking about doing it in a different way or going through a different kind of program. Think about different models you might support to find different ways of preparing teachers. I think accountability, you have a real obligation there.

Mr. **Miller**. Thank you.

Mr. **Peterson**. Next the gentleman from Texas, Representative Johnson.

Mr. **Johnson**. Thank you, Mr. Chairman. I was interested in your comments about teachers policing themselves. I wonder how you would accommodate that and furthermore, Mr. Miller, I am not sure that we do fund the schools very heavily. At least Texas is not getting their fair share if that is true.

Mr. **Miller**. I was just referring to loans and grants of students that are going through there and whether or not we are putting up the money for that.

Mr. **Johnson**. Well, that may be true. I don't know how we assess quality in that regard, but how do you get rid of the bad teachers? You got teachers' unions. You have the system that protects them. You even, in most of the systems, correct me if I am wrong, upgrade them to higher administrative positions and take them out of the teaching profession but you keep them in the schools. Good teachers are done the same way. You don't keep a teacher in the classroom. You keep moving them up. Maybe you take a lot of coaches and make teachers out of them. I don't know. How do you determine whether a teacher has a skill to teach reading, for example, and make sure the kids read in the first, second and third grade?

Mr. **Hickok**. If I had the answer to that problem, I think I would be a wealthy man. Part of the problem is, first of all, that we have been told for generations a very interesting message. The teacher is the single most important person in the classroom. That is what we need, to pay them more, give them tenure, keep them there. Then we are told-

Mr. **Johnson**. But if you give them tenure you can't get rid of them if they turn bad.

Mr. **Hickok**. But then we are told, you can't blame a teacher if the students don't learn. Now, that does not seem to make sense to me.

Mr. **Johnson**. That is a dichotomy, yes.

Mr. **Hickok**. I think you need to be able to develop ways to evaluate the quality of teaching. You can borrow it from higher education where faculty is evaluated every two years with a variety of different instruments, peer review, student review, external review by faculty from other institutions. You can do that with secondary teachers.

Mr. **Johnson**. Would you favor then recertification every period of time, say four years, and not giving them tenure per se?

Mr. **Hickok**. Right now in Pennsylvania there is legislation being considered that would require teachers to be recertified every five years to remain in the classroom, and to be able to be recertified they would have to go through professional development activities and higher evaluation.

Mr. **Johnson**. How often do you do that?

Mr. **Hickok**. Every five years.

Mr. **Johnson**. Do you think that is adequate?

Mr. **Hickok**. Well, it is moving in the right direction. I don't know if it is going to prove to be adequate or not. I think it is a very positive step for Pennsylvania in the right direction. Pennsylvania is not alone there. A lot of States have already done that. I look at this profession and maybe I am a little different here, but I see this profession very differently in the 21st century. The model that we borrowed, I think, is the notion that someone stays in the classroom forever. But the fact is in a dynamic, changing society I could see teachers in the classroom and then going out into the workplace and people from the workplace coming into the classroom because the teacher is trying to prepare young people to be engaged citizens. That is different from a faculty person in higher education who is trying to provide discipline, course work in a discipline. I think the profession needs to open itself up to all kinds of dramatic and exciting change that is going to take place. As opposed to sticking to the notion that you get tenure and you stay in the classroom and the evaluation process is limited if not weak, if not absent.

Mr. **Johnson**. You mentioned that Pennsylvania may be a little behind some of the other States. Do you agree that the Federal Government ought to keep their hands out of your business?

Mr. **Hickok**. I am an old-fashioned Federalist in the sense that I am a very big fan of States. Education has always been primarily a State responsibility. I think all of us need to do a better job with that responsibility. But I would like to keep it there with the States.

Mr. **Johnson**. So you would probably agree, the funding should be block granted to the States and let you use it where you need it the most?

Mr. **Hickok**. I think it always depends on the details, but overall I think a block grant approach is preferable at most times.

Mr. **Johnson**. Which could include teacher training?

Mr. **Hickok**. Yes.

Mr. **Johnson**. Thank you, Mr. Chairman.

Mr. **Peterson**. The gentleman from Virginia, Mr. Scott.

Mr. **Scott**. Thank you, Mr. Chairman. As I indicated in my opening statement, I view teaching as more of an art than a science. It is very difficult to set out certain criteria to show how much a person knows and convert that into the fact that they might actually be a good teacher. We have had some testimony about out-of-field teaching. Let me ask, does it make any difference for a middle school teacher whether or not they have a Master's or a Ph.D. in mathematics in terms of their ability to teach middle school math?

Mr. **Hanushek**. I can tell you the overall results that look at the effects of Master's Degrees or graduate training on teacher performance, and there is nothing that has such little impact on achievement overall as graduate education for teachers.

Mr. **Miller**. When you say graduate education-

Mr. **Hanushek**. Master's Degrees or Doctorate Degree, advanced degrees. So that if you look at the variation in the education of teachers, it has nothing to do with how well students learn in a particular classroom.

Mr. **Scott**. How does that correlate with requiring the difference between the 2.5 or a 3.0? How is that going to translate into picking the best people to be the teachers?

Mr. **Hickok**. One thing we are trying to emphasize in our requirements is content-based course work, not education course work. I think you are referring to a Master's or Doctorate in Education and whether that has any relationship to improved teaching. We think that at least starting out, you need to demonstrate academic excellence. And then demonstrate that throughout your entire undergraduate career. Once you are a teacher--I tend to agree with your comments that once you are a teacher, the skills you might need in the classroom, especially in the middle school years, which are challenging years, need to reflect--the advanced work you do needs to reflect the skills you need in the classroom. Some of that will be content based, depending on what you teach, but some of that very well might be pedagogy, it might be all kinds of methods courses. It may not be graduate work. It may be other kinds of preparation.

Mr. **Scott**. Whether you've got a 2.5 or a 3.0 or a 3.5 in advanced college mathematics, is that as major a factor in your ability to teach as some teachers will have a class that is disciplined and the same children with a different teacher will be totally undisciplined? Chaos in the classroom, some teachers have it and some don't. Isn't that more of a measurement than whether you had a 2.5 or a 3.5 in college?

Mr. **Hickok**. We think you need both.

Mr. **Hirsch**. I want to support what the Secretary said. The idea that there is a dichotomy or, put it this way, the idea that you don't need the content knowledge because you have the ability to control the class is no more valid, I think, than the idea that the content alone is sufficient.

Mr. **Scott**. I think you have to have the content at a certain level. You have to know what you are teaching. Whether you have a B-minus or an A-plus, in my judgment, is of less value than the kind of artistic idea that you can go into a class and kids behave themselves and sit up and learn because they are interested, rather than falling asleep or the teacher teaching this great A-plus knowledge to the front row only.

Mr. **Hickok**. Again I guess I think both matter. One of the things we are trying to argue for, and this is I think a reason for the grade point average, is that you are trying to make sure that when a teacher enters a classroom, they are an example of academic excellence. They need to be able to instill that in the student. And a lot of A students are not A teachers and a lot of A teachers were not A students. You need to have wiggle room for both of those things. Overall we think you need to set the bar high for the profession in the next century.

Mr. **Scott**. This evaluation every 5 years, what will you evaluate?

Mr. **Hickok**. Right now the proposed legislation looks at professional development, which would be course work or in-service work or attempts on the part of a teacher now in service to maintain their knowledge of their discipline and their profession. So it is a combination of content and pedagogy. Also teaching evaluations done by the district, usually worked out with the school board through local contracts.

Mr. **Scott**. Did the students learn?

Mr. **Hickok**. That would be part of the evaluation, certainly. I should point out that the local school board, when it puts together the professional development evaluation of teachers, has to make sure that you have parents and employers from the school district as part of that team because we recognize how important it is that they have a role in professional development as well.

Mr. **Scott**. How much of this is selecting the right people and how much of it is preparation?

Mr. **Hickok**. A lot of it is selecting the right people to become teachers. As someone mentioned earlier, that is a very big issue in Pennsylvania and I think across the country. We know most outstanding teachers were good students. They are engaged in professional development, are engaging in the classroom and are delivering great results. Most of what we are talking about here is to deal with the teachers who are not doing that right now and providing incentives for them to raise their bar of achievement.

Chairman **Riggs**. Congressman Deal.

Mr. **Deal**. Gentlemen, would you outline for me the top three disincentives for potential young people not going into the teaching profession?

Mr. **Ingersoll**. Well, we have heard a lot about how this is a highly esteemed occupation and teachers are missionaries and they are very important. That is true. But also this is not a high status occupation in this society. For instance, my first teaching experiences were in Canada and then I moved back here to the States. I grew up in Delaware. I was really shocked, the difference between the teaching job there and here. It was like day and night. Salary was lower. It was less respect in a sense. It is not a high status occupation in society. It is not well paid. But those actually are not the worst things. The worst things and the data clearly tell us that teachers' largest gripe is student discipline problems. It is very unpleasant to work with clientele, students are clientele in a sense, who are often rude. That is a tough one. That is one of the things that drives the fact that in the first few years very high rates of teachers leave. This is an occupation that has very high, abnormally high turnover rates in the first several years and then it levels off. So I don't know if I listed three, but there are several there.

Mr. **Deal**. Thank you. As the husband of a sixth grade middle school teacher, I think I agree with you. I hear that every day. Lack of status. That is not as important to some of course. Salary obviously is an incentive. Lack of student discipline, I think everybody would agree, is very high on the list of disincentives for entering the profession as well as reasons for leaving the profession for those who have entered it many times.

Do you as an individual or the panel have recommendations as to what can be done with regard to student discipline? Of course, we hear complaints that many of the programs we have created at the Federal level have created problems in terms of discipline. We have attempted to reform IDEA and give some greater flexibility there. Do you have some comments on this?

I think that is probably one of the major reasons for people not wanting to enter the profession, the experiences they have had as students as well as the horror stories that they hear coming out of classrooms.

Do you have some suggestions that we should consider to deal with that problem, if it is possible to deal with it at the Federal level?

Mr. **Hanushek**. I would make one short comment and that is as you start to get into questions of things like classroom management and what goes on in the classroom, it appears that the Federal government is particularly ill-equipped to deal with those questions. The attempts that you make, because they are noble objectives and things that we worry about, you write regulations, which often terribly constrain schools from doing good because they have to meet a certain set of regulations. This is an example of one kind of thing that I don't think the Federal Government should be very involved with in terms of the regulatory system. It might provide various incentive mechanisms and so on, if you think that is a national problem as opposed to a State or local problem, but not in terms of regulations.

Mr. **Hirsch**. Just to comment about underlying causes, discipline problems, the groups, the two groups that tend to create discipline problems in a classroom are both the high achievers on one end who are bored and the low achievers who are humiliated. And one of the great important things that the Federal Government indirectly might take a hand in, is to make sure that people come into a classroom academically prepared for that next grade. That is a province of the States, too, of course, mainly of the States, but I think that strings could be attached in a general way that would reduce some of these root problems. Just as class size is a reflection of the diversity of academic preparation, so are discipline problems partly a reflection of unevenness and diversity in classroom preparation.

Mr. **Deal**. Could I ask you in that regard, one of the things that education departments and education instructors have said is we need to mainstream all students, the mainstreaming versus the ability to separate those two groups out and deal with them individually. Has that attitude in the education community changed any?

Mr. **Hirsch**. No, but I think that again you need to draw a distinction between the early grades where there is a lot of evidence through international comparisons that tracking is not needed and later grades where it appears to be desirable.

Mr. **Hickok**. If I could briefly mention two things: In Pennsylvania we have a variety of programs, alternative education, one of which is to get disruptive students out of the classroom. We make sure they get an education, and they are not undermining the education of everyone else. We have the safe schools initiative. But I would argue that the problem we see in this country with discipline in schools is a reflection of a lower standard of discipline generally. What I try to deal with is, and we talk about it in Pennsylvania, is empowering teachers, school boards, let them go back and take charge of that responsibility a little bit more and demand and have higher expectations for discipline in school. And have students and parents, who have to be full partners in this become partners in that expectation. We have seen it work in some surprising settings.

Mr. **Deal**. Thank you.

Chairman **Riggs**. Congressman Roemer.

Mr. **Roemer**. Thank you, Mr. Chairman. I yield briefly to the gentleman from Virginia.

Mr. **Scott**. I just would make a comment, I would hope we don't blame the students for not learning. If they are disruptive, we want to empower the teachers to deal with disruptive students so they stop being disruptive. I would hope that we are not going to blame the victim.

Mr. **Roemer**. I thank the expert panelists today. This has been a fascinating hour and a half. I hope we do get a second round with you. Before I ask my three questions, I want to preface some criticism of the teaching profession by saying that as a former teacher, some of the most dedicated and talented and energetic and enthusiastic people that I have run into have been in the teaching profession. Working very hard in the teaching profession, sometimes as young people, other times for the last 25 years. Obviously we need more of those people. We need to find some way to keep those kinds of people in the education system, to train those kinds of people for the education system that we have today and for some of the problems that we encounter in our society. Given that testimony to some of the great people that we have in the education system-- as I go around to our schools, more and more of the high school students that I talk to, and I have only been in Congress 7 years now, it seems like in those 7 years that it has changed dramatically when I ask high school students who their heroes are. More and more of them are saying a teacher than they were even six or seven years ago, if they are lucky, if they have run into a teacher that has made a difference.

The statistics that we see are frightening. They are frightening in my home State of Indiana. The percent of high school classes and high minority classes taught by teachers lacking even a minor in the subject is almost 25 percent. One-quarter of the teachers in high minority schools are taught by teachers lacking even a minor in a subject. The percentage of math teachers in my home State without a minor in mathematics, 30 percent. I think that we have got some very big problems here.

I guess my three questions to our expert panelists would be, one, how do we improve the quality of the existing teaching force? What is your single or two best ideas for the existing teachers that are out there? We cannot just fire 25 percent of the teachers. Secondly, how do we produce better teachers? I see that in this report, "What Matters Most: Teaching for America's Future," on page 22 we have a continuum of learning taught at the University of Cincinnati that seems to be interesting. And in the Higher Education Bill, Title V, we are looking at some different proposals for shaking up the system. And thirdly, what is the single best way to attract the best people to go into high poverty and high minority districts to teach, where we have such a big problem today with recruiting into these areas?

Mr. **Hickok**. I think one thing you can do with teachers who are there is to work with the best and the brightest in the classroom, to help them develop, for others in the classroom who are not delivering at that level, ideas and programs. The fact is it is human nature. But I think people respond to a challenge. One of the reasons I think the teaching profession is viewed the way it is right now, in spite of the fact there are outstanding teachers out there, is because a lot of people look at it as a lesser profession. That has an effect on a teacher. In addition, if there is no way to provide incentives once you are in the classroom to reward outstanding performance--you always talk about trying to get the bad teachers out of the classroom. We don't do enough to reward the outstanding teachers. We need to find ways to do that.

Mr. **Roemer**. How do you reward them?

Mr. **Hickok**. I think if you talk to teachers, I should preface all this by saying that this initiative we are doing in Pennsylvania started with a conversation with teachers. It was not started by me or anybody else but a conversation with teachers. What they tell me is not necessarily merit pay, although that might be one of the ingredients, but recognition of their success through various kinds of rewards, awards, classroom assignments, for example the way they might do extra field trips. The thing that matters to good teachers is the chance to be good teachers.

Mr. **Roemer**. How do you attract the best teachers into some of the high minority, high poverty areas?

Mr. **Hickok**. I know what I think does not work as well, at least in Pennsylvania, is scholarships that have as a condition that states if you go into a poor school district or an urban city school district, then your scholarship will not have to be repaid. That has not had ant effect in Pennsylvania. We have not been able to recruit people to go into those districts based on those scholarships. What we think has a tendency to work there is, again tap human nature, let individuals recognize the unique status of providing an education in those very challenging professions. Don't be bogged down with the notion that you have to have all these certification requirements. Alternatives to certification has been able to attract a lot of good, qualified people to urban districts because they are there. They want to contribute. They want to make a difference, but they are not allowed to because they don't have certificates.

Mr. **Roemer**. Could I ask Mr. Hirsch to answer the same question?

Mr. **Hirsch**. One of the specific recommendations in my written testimony is to provide incentives for in-service training, which is the main way teachers, except in the summertime, learn alternatives, improve their knowledge and their skills, tie some strings to those financial incentives so that they are focused on subject matter. So you get the equivalent of a minor in math, if you need that knowledge, through in-service training which does not focus on process. Right now most of the in-service are called Mickey Mouse affairs by teachers. There is a whole industry of people out there who are purveying that snake oil. There are many people ready and eager to provide, these are very popular with teachers, very solid content-oriented in-service training in the subject matter. I think that would be the single most effective way of improving the knowledge base of the existing teachers.

Mr. **Hanushek**. Could I add quickly, I think that instead of trying to prepare the teachers more at the extremes, you just have to select good teachers and reward them highly. Right now we don't reward particularly effective teachers in the inner city schools. We treat them as if they are failing, because some of their students are achieving a low-grade level, even though they may be extraordinarily good at their job. Reward good teachers as opposed to trying to change bad teachers. I subscribe to the view that it probably has nothing to do with the training they got but with the skill the people brought to the job. You just want to keep the good ones and reroute the bad ones to other occupations.

Chairman **Riggs**. Dr. Hanushek, I want to compliment you on your longitudinal research. I assume that we don't have enough data yet on the California experiment in classroom size reduction to make any conclusions.

Mr. **Hanushek**. If I might add, we will never know anything from California. That is the unfortunate thing. We have spent a billion dollars a year and we will never be able to assess it because everybody in the State reduced class sizes at the same time. So unless you think that this year's performance can be compared to last year's performance and that the only thing that changed was class size, we will never know anything about that. That is the--what I think is the pity of the way this was done and the difference between Tennessee. Tennessee did not answer all the questions, but it set out to try to find out whether this was going to have an effect or not as opposed to just declaring it for everybody.

Chairman **Riggs**. I am assuming that you are saying that we will not be able to make any conclusions even though that would be the largest variable as you look at the years as classroom sizes are reduced versus past years.

Mr. **Hanushek**. Yes, I am saying that. Because in fact what has happened is that as California introduced its plan, it did it very suddenly without expectation by districts. There was a lot of rushing around to buy temporary classrooms and buy temporary teachers. There were some districts that were slow getting started. Is that because they were smarter or dumber in their reactions to this? And the immediate effects will not be any long run effects. If we wait five years, then a lot of things have changed, not just the class size. The way it has been done, people in some education schools will go around and they will survey teachers and the teachers will tell you uniformly that smaller classes are better and they feel they are doing a more effective job, but we will never have scientific evidence on that.

Chairman **Riggs**. It occurs to me that we were remiss not to invite a Department of Education official to appear with you today on this particular panel because we will have to get at the underpinnings, the theoretical or methodological underpinnings of the President's budget proposal. I don't want to believe that that is simply another poll driven initiative that has a good political sound bite.

Mr. Hirsch, you have done some tremendous work, particularly focusing on our inner city schools. Are the problems that we have talked about today with respect to finding and keeping good teachers exacerbated in the inner cities, in our urban centers? And if so, why is that?

Mr. **Hirsch**. Yes, but my experience in the inner city has been with the particular reform that I am associated with, which is grade by grade rich content in those schools. Certainly we see that everybody's morale tends to improve if students come into a classroom prepared for what that grade has to offer and also the parents know exactly what their children are supposed to be learning. People think that that exists in school districts now. It does not. It is pretty much the teacher closes the door and it is up to the individual teacher what goes on. So that when you introduce, when all the teachers in an urban school get on board with that kind of reform, it tends to reduce all kinds of difficulties, and that is why I mentioned there are so many, as Professor Hanushek mentioned, there are so many variables there. Our experience is a rich curriculum, well defined in urban schools, which has a tremendous invigorating effect, both on performance but also on closing the gap between disadvantaged and advantaged students, the social equity issue. I don't know whether that is the issue you wanted me to raise.

Chairman **Riggs**. I am glad you did. Let me ask a follow-up to that, and that is this subcommittee in field hearings and here in Washington has heard a lot of testimony about the success of parochial schools, Catholic schools in the inner cities. The data suggests that they are every bit as ethnically or racially diverse as public schools. I am wondering, from your broad perspective, why do Catholic schools succeed where so many public schools fail? How much of that can be attributed to teachers?

Mr. **Hirsch**. To go into a parochial school, parents have to choose to do something different so you already have a variable there, which complicates the issue, parents who are very concerned about their children. But my belief is that strong discipline and strong subject matter orientation in the parochial schools, which are very much at odds with the "let the child grow as a plant" principle that I described, which dominates in public schools, will account for a lot of the improved performance in the parochial schools.

Chairman **Riggs**. Mr. Secretary?

Mr. **Hickok**. Briefly, I could take you to a school in inner city Baltimore, a school that up until a few years ago, an elementary school, that was having a very difficult time. It was failing. The principal was bothered by that. The principal walked down the road to a private school where everyone was doing well, took that curriculum, brought it back to her elementary school. It was content driven. The performance of the students began to improve. The morale of the school began to improve. Parents became more involved. It is a model of excellence. That just backs up the point that he just made. And that is high expectations, a sense of mission. You typically find some outstanding individuals ready to take that mission and move it forward. And once you brake that cycle, good things happen. I could take you to that school today, and I think the fifth grade writing would stun most of the members of this panel.

Chairman **Riggs**. Let me ask you another question on that, I think it would be of interest to all my colleagues, many of those private inner city schools, granted the majority of them are religious or parochial, teachers are paid less, sometimes considerably less than what their public school counterparts earn. Have you observed that and, if so, what does that suggest to us about the correlation between compensation and quality in teaching and instruction?

Mr. **Hickok**. Well, let me clarify, the school I was talking about was a public school. You are right. Philadelphia, for example, has a large number of private parochial schools and on average the teachers are paid less. On average the students do better. The point, I guess, is that everyone is there because they want to be. Teachers are willing to be paid less because they feel they will get some professional fulfillment that they cannot get somewhere else. I am not saying that that is the model we can turn to or anything, but it seems to me we could learn from that.

Chairman **Riggs**. That also makes a pretty good argument for parental choice, but I won't go there.

I want to get to Congressman Kildee. Let me conclude by making a couple of observations. One, I think we have to require higher expectations and standards of students and teachers alike. I really believe that those standards have to be, should be, set at the State and local level. Secondly, we have another concern and I would love to have the chance to chat with you or get you to respond to this question in writing. We had a field hearing last week in southern California about a growing nationwide concern, and that is the 350 to 400,000 unfilled information technology positions in the work force. Our hearing coincided with an article in USA Today saying that this booming economy continues to create these jobs, which for the most part are high-wage, high skilled jobs. They require a certain level of technological capability and computer literacy. In fact, we heard in our hearing from a couple of employers who, even though we were there to focus on technology and education, who also were arguing for a change in our current Federal employment-based immigration policy.

I am wondering how technology is affecting our schools and whether or not we are doing a good job teaching teachers how to use technology, because there are those that suggest technology is revolutionizing the teaching profession. My question is, is there a correlation, for all four of you briefly, is there a correlation between incentive or merit pay programs and the recruitment and retention of high quality teachers? Let us start with you and go right down the panel.

Mr. **Hickok**. I don't know of enough merit pay programs out there that they can give me, others might have the answer, that give me any data sizable enough, that have been there long enough that I can tell you the answer to that question. To me it is a kind of common sense issue. If you know going into a position that you will be evaluated and rewarded for outstanding performance, that tends to attract a certain kind of person. If you know going into a system that after a certain number of years you have got job security, no matter how well you do, that tends to attract a certain kind of person. And I typically would like to make sure that I am attracting the best and brightest.

Mr. **Hirsch**. I second those comments. I don't know any data, but I do think evaluation and accountability all along the way is very important.

Mr. **Hanushek**. I subscribe to the Secretary's comments also, that differentiated treatment is very good. I don't think that there is any evidence that merit pay per se attracts computer specialists or any specific specialist. As we have done merit pay, we have tried it in a lot of districts around the country. It has generally failed, in part because it has been very small differentials. There has been a lot of resistance to merit pay, in part by the teachers. And it has been driven out in most school systems. So the kinds of merit pay that you might be thinking of probably have not been tried. It has been a very small differential that is not going to attract computer programmers.

The second part of your comment that has been discussed, I first saw it discussed in a 1959 publication about the shortage of math and science teachers in the country. That publication suggested that because outside opportunities for math and science teachers are considerably larger than those for other teachers in the school system, we should perhaps pay slightly different amounts to people in those fields to try to attract them from the outside. We have not done that with math and science teachers. Instead, the argument has been we should raise all teachers' salaries, because why should math and science teachers, just because they are in more demand outside, be paid more? The result is that you either pay more than you have to for teachers in general or you get bad math and science teachers. The same holds, I think, for information technology and other related jobs where there is a much stronger job market on the outside. You have to think that you are competing away from other businesses and opportunities of these people if you want good people in your schools.

Mr. **Ingersoll**. Well, there is kind of a contradiction here. We are talking about upgrading this work force and getting the best and brightest. This would suggest we need to bring up the generally low salaries. There is nothing wrong with trying to pay for merit and performance. That really should not be a substitute for making this a decent paying occupation in general.

The other comment I want to make on this is that there seems to be a tendency to think of teachers as the problem here. They are not doing a very good job, et cetera. Certainly there is bad teaching, but a lot of the bad teaching is a result of the environment that teachers are teaching in. You can have all the wonderful training in the world, but if you are in a situation where there are a tremendous amount of discipline problems, if you are in a situation where you are assigned to teach things out of your field, this is not going to make for quality teaching. So we not only need to address, if we want to improve teacher quality in this country, not only do we need to look at the teacher but also where they are working. And there are things we can do. A lot of this may well be out of Federal jurisdiction, but I wanted to make a plug for the "parental right to know" clause which is in a couple bills, including Representative Miller's?

The "parental right to know" clause is basically, I think, a terrific idea because it will shed light on what has always been a dirty little secret. This issue of out-of-field teaching. Parents have never known about it. If you bring it to light, it will force some accountability. It will force schools to deal with it. Perhaps it calls for greater training programs, it calls for recruitment. Perhaps it calls for better management of your human resources. I just think it is misplaced if we focus all of our attention on fixing teachers and not fixing the places in which they work.

Chairman **Riggs**. Thank you.

Congressman Kildee.

Mr. **Kildee**. Thank you. I appreciate this hearing today; I wish I could have attended all of it. I know the testimony given today will be very helpful also to Chairman McKeon and myself as we draft the teacher training section of the higher education bill. I do appreciate very much your testimony and I yield to the gentleman from California.

Mr. **Martinez**. I just wanted to respond to the idea of Catholic schools and teachers, and why the students do better there.

I think, Mr. Hirsch, in the written testimony that you submitted, you hit it right on the head when you said, for many decades now a natural process has been stressed over artificial knowledge in our elementary schools. This has been a disservice to all our children, this is the key, but most of all to disadvantaged children who receive little enabling knowledge, which they need, from their homes.

The parent that sends his kid to Catholic school is a parent that generally knows the value of education and cares about the education of their children. They send them there. The teachers that go and teach there, they know they don't have to deal with the discipline problem because in most Catholic schools if they have a discipline problem, they kick the kid out. They don't care. But in the public schools, they have to deal with those children because laws have been passed that say you have to deal with them.

I have a personal experience in my own family where my nephew was kicked out of three Catholic schools until one priest said, "no, we are going to deal with him". We finally found someone in the Catholic school system that would deal with a problem child. Do you know what that young man is today? He is a doctor because they dealt with the problem.

That is the difference. Why do Catholic schools do better? I don't think it really has that much to do with curriculum. Curriculums are pretty much alike.

I sent my five children to parochial school. Then they got their choice, whether they would continue on in parochial school or to go public school. All except one chose public school. They did as well as the one that stayed in parochial school.

So I think that we have to understand something, the problems that we are dealing with here may improve the quality of the teacher. And we may improve the quality of the school, but if we don't involve and empower the parents--and I think you alluded to this, Mr. Hirsch-- the parents have to be involved. Without that element in it, we can do all the improvement we want and the kid still is not going to learn. The parents are an important and essential part of that.

Mr. **Kildee**. I yield back.

Chairman **Riggs**. I understand that Congressman Miller wanted to propose a follow-up.

Mr. **Miller**. I think the points raised by Mr. Hirsch and Dr. Ingersoll really have got to become part of this debate. When we're all done getting the well-trained and motivated teacher into a classroom, if a teacher is dealing with a range of students in terms of their abilities, they are sort of doing triage, trying to hold some kids together. And I have spent enough time with fifth and sixth grade teachers who inherit children that have no ability to read at grade level, no ability to compute at grade level, or do any tasks that would be required of them. Yet they are in a classroom with other children, as you point out, those who are highly motivated and those who are deeply frustrated. That starts your discipline problem.

The number of teachers that I encounter are so angry about teaching out of their field and doing so on short notice and doing so without any opportunity for preparation. This is really a fraud perpetrated on parents, and it is a very difficult thing because people get sick. Their spouses get transferred. You have pregnancies, illnesses. Okay, you still have got to have people who are competent to teach in those core areas. That is your mandate. When you consider the time you spend with substitutes, when you consider all of the rest of it, the numbers start to get alarming.

In terms of the time spent on tasks with a competent teacher, you are really talking about what becomes almost a de minimis period of time when you take into account the lack of discipline. And that students are not prepared to achieve the tasks that supposedly are going to be achievable in that fifth grade section. I just want to make sure that those were not glossed over in all of this discussion about individual teachers, because that is the environment that the teachers find themselves in.

I think we have got to look at education as a process. I think we look at it as a place. Every Monday I teach in a continuation high school. I have honor students who have been thrown out of schools. I have kids that come off the county farm. Yet we still insist that they are eleventh graders, twelfth graders or sophomores, and that has nothing to do with their ability.

It seems to me that somehow, if we learn from business and technology, there is a process here. You have either acquired skills and tasks and achievements and you have moved on, or you have not. We have social promotion. It is just a total lack of recognition of what the individual student has achieved at a given period of time or has not achieved.

I think we can reduce the class size, we can do all of this, but if you continue to put children in classrooms that don't have a real chance at completing the work, we are just wasting another year of their time.

As we concentrate on teachers, I think we also have to concentrate on the environment in which they are then asked to do their job. It raises much more difficult social and political questions than perhaps even the skills and thresholds for teachers.

I really appreciate this panel's spending time with us this morning, this afternoon and the rest of the day.

Chairman **Riggs**. That is our second panel of witnesses that you are referring to. I thank Congressman Miller and I will exercise Chairman's prerogative to have the last word.

How culpable are American teachers today in this problem of social promotion? A brief comment from each of the four of you.

Mr. **Hickok**. I think the problem is not to be placed at the seat of the teachers any less than the parents, any less than the taxpayers. The fact is that as a system all the different actors in that system respond to whatever incentives are available. For far too long there has been plenty of incentive to move kids through whether or not they are prepared, and every one sort of blinks and turns the other way. You cannot blame a teacher for that, if that is what the system sort of produces and provides an incentive to produce.

I think it is very, very good that we as a Nation are stopping the process of blinking and turning the other way. Recognizing that when we do that, the person who really is the victim is the student. The student who one day ends up without a good education, without a good job and, therefore, everyone else's responsibility but his own. I don't think we blame teachers. I think it is a systemic problem.

Mr. **Hirsch**. I was very glad to see Sandra Feldman, new President of the American Federation of Teachers, make a strong statement against social promotion. It was very welcome. Another reason not to blame teachers is that teachers have been indoctrinated with the idea that much worse than social promotion is something called retention. They are told universally in schools of education that, quote, "research has shown that retention is very bad for children". Of course in our current circumstances those are the two possibilities, retention or social promotion. Of the two, one hopes that that sentiment is shifting towards the idea that social promotion is even worse than retention. But most of all we know that retention is not necessary. At least retention is desirable perhaps in some of the procedural learnings where, like reading and writing, kids go at different paces and develop at different paces. But in most of the cognitive learnings, what the psychologists call cognitive learnings, just the facts about American history or about geography or even basic math, facts of science and math, those learnings are things that all children can learn if they are offered them in the classroom. But because we don't have these very solid schoolwide, much less districtwide determinants of what a child should learn before going to the next class, it is hard to argue that this diversity and need for promotion and retention are not already built in.

I think we are going back to the issue that Congressman Miller mentioned about the diversity of preparation coming into a class because if you are not ready to learn what is in the class, you have to be retained or socially promoted. Those are the alternatives, so it is a much more fundamental issue that neither of those two terms quite captures.

Mr. **Hanushek**. I would answer your question in a slightly larger context that I think includes some of the comments of Congressman Miller and many of the other Members of the committee. Virtually nothing in our schools today is organized around student achievement. Our schools are not managed to provide student achievement so that we have incentives to fill a classroom with a body as opposed to get somebody who is trained to teach the subject. We have--there are no incentives to teachers to hold back somebody and get the same person next year. There would only be incentives if we were thinking in terms of some developmental program to get the achievement of that person up. Fundamentally, teachers are responding to the incentives that they face and they are complicitous in the sense that they go along with the incentives that are there which are not to deal with these problems of social promotion or retention or management of the teacher force or what have you. Dealing with just the symptoms as opposed to the more fundamental incentive problems will not solve our problems.

Mr. **Ingersoll**. Yes, absolutely, teachers should not be held accountable for lax standards, whether they are behavioral or academic. Teachers do not set school policy within the building, within the district, within the State. The data is clear on this. Teachers would love to have much tougher behavioral standards and much tougher academic standards, but they do not control those issues. Whether it is governmental or larger societal, who knows but you, it is certainly wrong to hold them accountable or blame them for these issues which they do not decide and often do not like.

Chairman **Riggs**. I would argue that teachers many times do through their collective bargaining units influence policy. Again that is a debate perhaps for another day. I will say though that I really do support the idea of site-based decisionmaking where individual teachers can have more say in the formulation of policy.

I know we would like to continue with you gentlemen, but we have another equally august and distinguished panel waiting and I recognize it is in the lunch hour. I would like to do this, with the indulgence of our second panel of witnesses, I would like to excuse this panel of witnesses. I would like to recess the subcommittee shortly and reconvene at 1:00.

The subcommittee stands in recess.

[Whereupon, at 12:30 p.m., the subcommittee recessed, to reconvene at 1:40 p.m.]

AFTERNOON SESSION

Chairman **Riggs**. Our second panel of witnesses will be seated. I apologize for the delay and the inconvenience and thank you for your indulgence. I have a little bit different order here so what I would like to do is proceed by this order and our first witness of the second panel is Ms. C. Emily Feistritzer. She is President of the National Center for Education Information in Washington, D.C. She will discuss the myth of teacher shortage and highlight the potential benefits of alternative teacher certification programs.

Thank you very much for being with us and we look forward to your testimony. Please proceed.

STATEMENT OF MS. C. EMILY FEISTRITZER, PRESIDENT, NATIONAL CENTER FOR EDUCATIONAL INFORMATION, WASHINGTON, D.C.

Ms. **Feistritzer**. Thank you for inviting me to participate in this group this morning and afternoon. I have been asked to address the issue of the reality of teacher supply and demand. That is what I will devote most of my time to.

We have heard a lot about how the Nation will need to turn over the teaching force in the next decade. Another way it is put is we will need 2 million more teachers in

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the next decade. We will need 200,000 teachers per year for the next 10 years, and so on. I think it is terribly important that the administration and the Congress look at what that really means. The reality of it is in the definition of what we mean by a new teacher. New teacher to most people means somebody who has never taught before. What new teacher means in the context of these statistics actually are newly hired people in a given school year.

Data from the National Center for Education Statistics Schools and Staffing Survey showed that in 1993, for example, 139,000 newly hired people were hired in classrooms and fewer than half of those were brand new to teacher--brand new to teaching teachers, or what the department calls newly minted teachers. Surveys by other people have shown that only about 2 percent of the teaching force in any given year is a new teacher and that translates into about 45,000 people per year, not 200,000 people per year. So you can quickly come up with a 200,000 new teacher figure if you include people transferring from private schools to public schools, if you consider that a lot of people are reentering the teaching force, people who left teaching and are coming back, and if you consider people who trained to teach at some prior time and are coming back into teaching later in their life. But straight out of college, new to teaching teachers, the number even projected in the next decade is more around the figure of 45,000, and this is up against a total public school teaching force of about 2.3 million.

It is terribly important, I think, also that you consider that colleges of education that historically have the responsibility for training teachers in this country are cranking out more than 100,000 Bachelor's Degrees in Education per year. There are about 6 million people in the United States today that have at least a Bachelor's Degree in Education. Having a Bachelor's Degree in Education in this country generally means that you are fully qualified to teach because the way people are defined to be fully qualified to teach is if they go through a college-based approved teacher education program in a college or university. Of the 6 million people currently holding Bachelor's Degrees in this country, only about up 1.8 million of them are in classrooms in elementary and secondary schools in the country. So the fact of the matter is that the Nation is already turning out vastly more people who meet the definition "qualified to teach" than are currently teaching.

It is also a well-known statistic that only about--pardon me, let me put it another way--that 40 percent of the people who get fully qualified to teach in this country ever teach. So a very high percentage of people who gain the credentials and are so-called fully qualified to teach never wind up in classrooms. Why that is we don't seem to know. But the fact of the matter is that there are a lot more people getting education degrees and going through college of education programs preparing to be teachers than wind up in classrooms teaching.

I also in the written testimony go through a lot of data that supports that. If you look at people in the pipeline, people in high school and college freshmen saying that they intend to become teachers, the numbers are vast. If you just count on that alone for the future teaching force, you will have far more than enough people. There is no other occupation, much less profession, that continues to produce far more people than ever wind up in the job for which they are being prepared. One reason why that is the case, I also cite some reasons in the written testimony, is that the demand for additional teachers is not uniform across the country. It is not uniform geographically and it certainly is not uniform in terms of type of community or subject area demand. You can have national statistics, which don't match where the demand for teachers are. The demands for new teachers are greatest in inner cities and in specific subject areas such as special education and bilingual education and to a much smaller extent in math and science. Only about 4 percent of students in traditional college teacher education programs say they are interested in teaching in inner cities. This compares with about a third of people who are interested in coming into teaching through alternative teacher certification routes, by the way.

The vast majority of teacher education candidates in traditional programs want to teach in their own backyard. They want to teach near where they were born and raised and go to school. Many people who get education degrees never intend to use the degree to teach and, lastly, licensing of teachers in this country is structured in such a way that mobility across State lines is difficult if not impossible. For example, you can be fully certified to teach in Pennsylvania and want to teach in California where the demand is very great and not be qualified to teach in the State of California.

Lastly, alternative teacher certification is really my field. We have been surveying States every year since 1983 about alternative routes for bringing people into teaching. I regret that the red light is already on because I have a lot to say about that. Alternative teacher certification attracts large numbers of life experienced adults from other careers, early retirees from the military and other careers. There is a lot of data to support that the quality of the teaching force issue could more than be solved by opening doors to these populations of people who historically have been sort of rebuffed by the more traditional ways that we bring people into the teaching profession.

SEE APPENDIX H FOR STATEMENT OF MS. FEISTRITZER

Chairman **Riggs**. Thank you. I am sure we will have a chance to delve into that a little bit when we get to questions and answers. I am personally very interested in that.

Dr. Dale Ballou is Professor of Economics at the University of Massachusetts in Boston. Dr. Ballou will provide a critical appraisal of the National Commission of Teaching in America's Future report entitled "What Matters Most: Teaching for America's Future." Dr. Ballou, I thank you for being here. Please proceed with your testimony.

STATEMENT OF DR. DALE BALLOU, PROFESSOR OF ECONOMICS, UNIVERSITY OF MASSACHUSETTS, BOSTON, MASSACHUSETTS

Mr. **Ballou**. Thank you. This is the first such committee I have ever come to in this capacity and I am a little bit naive. As a measure of my naivete, I actually have a five-minute presentation. When I stop at the end of 5 minutes, keep in mind it is not because I have nothing more to say.

I also will be commenting on a variety of aspects of the program that is advocated by the National Commission, recognizing that not all parts of that program have found their way into all pieces of legislation that might be considered by this committee.

Michael Podgursky of the University of Missouri and I have made a close study of recommendations of the National Commission on Teaching in America's Future. For the following reasons we are extremely skeptical of the commission's claims and would advise against many of the policies advocated in the commission's report.

One, the commission's program for improving teacher preparation is not likely to prove very effective. The commission would empower various professional organizations to accredit teacher education programs, develop licensing exams, certify master teachers, et cetera. In our analysis of the available data, we have been unable to find hard evidence that the activities of these organizations have a significant impact on student performance. The commission claims otherwise based on the research literature, but the studies on which the commission relies have only modest policy implications at best. They do not support the far-reaching reforms the commission proposes.

Two, parts of the commission's agenda could be positively harmful to student learning. For example, one of the constituent members of NCATE which would be responsible for accrediting teacher education programs is the National Council of Teachers of English, which has been a strong proponent of the whole language approach to the teaching of reading in the primary grades. Adopting the commission's plan could put such an organization in a position to insist that all reading teachers be trained in methods that much of the public has rejected and that remain controversial among educators. Simple prudence would suggest that this is not a wise policy. Granting monopoly powers to a national accrediting and licensing agency could lower teacher quality over the long term by stifling innovation and preventing competitors with superior ideas from having a chance to demonstrate their merit.

Three, by adding requirements to teacher training and preparation, the commission would increase the time and cost to teachers of acquiring licenses. This will deter some individuals from becoming teachers. Among them are liberal arts graduates who choose their majors out of love of the subject who only begin to think about teaching as they near the end of their undergraduate studies. These would appear to be the kinds of individuals we would most want to attract into teaching, and yet they reach the end of their undergraduate studies confronting an additional year or two of extra course work before they would be allowed to teach. That is a deterrent.

Teacher training requirements also deter talented undergraduates who are attempting to keep other professional options open, who find it difficult to handle extra education course work. Lengthy preservice training also discourages those who are already in the work force who are contemplating mid-career changes in order to become teachers. The cost to them of quitting their jobs to return to college for education courses is quite high.

In all of these cases, we need more flexibility, not less, to open career paths into teaching. The benefits of flexibility are apparent in the private school sector. Private schools hire many unlicensed, uncertified teachers with no prior education course work. By so doing, they have significantly increased the share of their faculties with strong academic backgrounds.

Four, the commission's proposals take education policy in the wrong direction. They continue a failed policy, one that focuses on inputs to education rather than outcomes. It is time instead to start holding public schools accountable for what students learn. We should make sure administrators know what they are expected to achieve, hold them responsible for those results and empower them to make the managerial decisions necessary to achieve those ends. This means among other things giving them more freedom to hire promising teachers whatever their prior training.

Instead, the commission's plan continues a policy of regulating teacher labor markets. This kind of regulation ultimately undercuts the goal of enhancing local accountability. Administrators who lack authority to make critical personnel decisions cannot realistically be held responsible for results.

SEE APPENDIX I FOR STATEMENT OF MR. BALLOU

Chairman **Riggs**. Thank you, Dr. Ballou.

Ms. Kati Haycock currently serves as Director of the Education Trust in Washington. Established in 1992, the goal of the Trust is to assist school districts and institutions of higher education simultaneously to launch reform efforts aimed at improving teaching and learning, for minority and low income students in particular. Prior to coming to the Trust Ms. Haycock severed as Executive Vice President of the Children's Defense Fund. She will discuss the important difference between teacher quality and teacher quantity.

Ms. Haycock, thank you for being here. Please proceed with your testimony.

STATEMENT OF MS. KATI HAYCOCK, PRESIDENT, THE EDUCATION TRUST, INC., WASHINGTON, D.C.

Ms. **Haycock**. Thank you, Mr. Chairman. A few years ago this committee set in motion a process by which communities and States all across the country are establishing new and much higher standards for what they want their students to know and be able to do. My hope this afternoon is to give you a glimpse at the progress of that effort. A look at the biggest problem that is getting in the way, and to share some ideas on some steps you might take to help States to solve those problems.

Over the past couple of years the staff of the Education Trust has spent the bulk of its time in classrooms all across the country working with teachers who are trying to improve their teaching in a way that will get larger numbers of their students to the new standards that their communities and States have set. We have come away from that experience deeply worried, but let me be clear about why. We are not worried, as some people are, that American students cannot reach the new standards. On the contrary, it is very clear from experience all around the country that our young people can achieve at much higher levels even if they are growing up poor or in difficult neighborhoods.

We are worried, though, that many of today's teachers do not have the knowledge and skills that it takes to get their kids to higher levels of achievement. As has been mentioned earlier, far too many of our teachers are drawn from amongst our least able undergraduates in colleges and universities. Further, many of them, as has been pointed out earlier, have only a very, very thin grasp of the subject matter they are teaching and get almost no support to deepen that knowledge after they get into the classroom.

Indeed, in our work with classroom teachers, teachers often turn to our staff and say, how am I supposed to get my kids to standards that even I do not meet. That in effect is the problem. As bad as that problem though is in general, the problem is much worse in schools with concentrations of poor and minority youngsters. Such children are typically taught throughout their educational careers by our least well-prepared teachers. That practice has particularly devastating effects on poor and minority children because, as you have heard earlier, the single most important ingredient in whether these children will meet high standards is a well-prepared, well-qualified teacher.

Fortunately, some recent experience that we have had in Texas has convinced us that it does not have to continue to be the way it is. Beginning back about 1992, leaders at the University of Texas-El Paso began to realize that many of the teachers that they were producing did not have the knowledge and skills they needed to get El Paso children to the standards that had been set in El Paso for student achievement. So with lots of advice from teacher leaders in the three El Paso school districts, these leaders set out to entirely remake the education of teachers at the University of Texas-El Paso. New teachers now have to take twice, in fact more than twice, as many math and science courses, for example, as they did before these changes were made. And perhaps more important, those courses are taught in very, very different ways than they were before.

Now, it is important to be honest about those changes in El Paso. Most of them were in fact attributable to incredible leadership on the part of the President, the Dean of the School of Education and, in particular, the Dean of Science. But there are several important lessons in the Texas experience for Congress. First, Texas' very tough K-12 accountability system, which demands significant growth in student achievement from every school and from every group in that school, was the real impetus behind the changes in teacher preparation. School districts that are under pressure to increase their results do in fact, it turns out, in turn place similar pressure on universities to produce better teachers.

Second, once it was clear both that the current teacher force was inadequate and that improvements like those in El Paso are possible, what happened in Texas is that the State has enacted a parallel accountability system that demands improved results from the universities that prepare teachers. This accountability system in turn is driving change in institutions of higher education all across Texas.

Left to their own devices, though, few States will actually travel that route, at least in part because they are deeply afraid that higher standards in their State will cause prospective teachers to flee to other States. You can help with that problem by using the leverage you have available to push action across the country.

There are at least four critical leverage points available to you. First, you can provide incentives for States that are willing to set higher standards to rigorously assess whether candidates meet those standards. And enforce those standards by not giving waivers except for in situations for real emergencies.

Second, you can as, Congressman Miller has suggested, make parents finally partners in this effort by insisting that schools that receive Federal funds give parents information about the qualifications of their teachers and in particular let them know when their children are being taught by unqualified teachers.

Third, by increasing accountability in higher education by withdrawing Federal support from colleges whose graduates do miserably on teacher licensure exams. And, finally, by investing in a very targeted way the new resources that you have available in the most pressing problem of all, and that is preparing and supporting teachers for high poverty urban and rural schools.

The most effective ways we think you can do that are by, number one, focused university school district partnerships that will prepare and support the best teachers for service in these schools. And, second, generous loan forgiveness for high achieving undergraduates who opt to teach in high poverty areas. In other words, by creating for the 21st century something like the Teacher Corps that we are all familiar with from the 1960s.

I want to conclude by simply telling you that I cannot reinforce enough how vitally important it is that we attend to the particular crisis that our high poverty schools are facing. Last week I spent a couple of days with school principals from throughout San Diego County, the week before that with school principals from throughout San Jose, California. These local leaders are truly desperate. They know how terribly important good teachers are. Indeed, every day they see clear evidence that good teachers can entirely compensate for the so-called effects of poverty. In other words, they can get very poor children to high levels of achievement. But they cannot find such teachers now because local universities are in fact producing only teachers who want to teach in the suburbs.

If anything, in this State the recent class size reduction legislation has actually made the problem worse, drawing fully credentialed teachers from high poverty schools into newly created positions in the suburbs and replacing those teachers with unqualified or underqualified teachers.

These local principals can in fact make a difference but if they are going to do that, they need your help. They need you to say that their problem comes first, that before you put out resources to reduce class sizes across the board or to otherwise invest in the creation of additional teachers, that you are going to use your resources in a focused effort to make sure that the very children who are most dependent on their teachers to learn are in fact taught by the best, no longer the worst.

SEE APPENDIX J FOR STATEMENT OF MS. HAYCOCK

Chairman **Riggs**. Thank you, Ms. Haycock.

Mr. Paul Steidler is Director of the Alexis de Tocqueville Institution Educational Forum Project. The project works to empower teachers and parents. He has published numerous articles about education in publications, including the Washington Post, the Wall Street Journal, Education Week and the Christian Science Monitor. I have seen several of those articles. He will discuss how to improve teacher quality and distribution through market-based solutions.

Thank you for being here. Please proceed with your testimony, sir.

STATEMENT OF MR. PAUL F. STEIDLER, DIRECTOR, ALEXIS DE TOQUEVILLE INSTITUTION, ARLINGTON, VIRGINIA

Mr. **Steidler**. Thank you very much. In many ways it is quite perplexing that we have to discuss a teacher shortage and, relatedly, issues of teacher pay. Over the years parents and other taxpayers have been exceedingly generous in what they are willing to spend for public education. On the whole teachers have not been motivated to enter the profession for money and are genuinely concerned with children's welfare, factors which earn them significant respect.

I submit that a core problem we face today in K to 12 education from both an economic and administrative standpoint is that there has been a significant increase in the number of blockages between teachers and parents in recent decades. Thus, solutions to the low pay of teachers and a potential shortage must focus on empowering parents and empowering teachers.

In fact, to have the best possible schools for our children, we must meet a fundamental challenge. We engineer public schools so that deserving teachers are paid more, have better working conditions and greater hegemony in the classroom. Simultaneously, administrative costs and bureaucracy need to be reduced significantly.

Teachers, particularly hard working and enthusiastic ones, will be the greatest beneficiaries of such change. Some in fact could earn over $100,000 annually without an increase in taxes. The best way to accomplish these aims is through the expanded use of market principles and practices. In fact, the degree to which our education system has diminished its focus on teachers is both troubling and striking.

Since 1959, taking inflation into account, public education has more than tripled on a per pupil basis. By comparison, teacher pay has risen barely 40 percent during the same period. Thus, teachers' raises have been less than 1/7 of the raise that the system as a whole has received. Today barely half of the personnel in the public school system are teachers. In fact, for every three teachers added to the public payroll since 1959, four nonteachers have been added.

These and related findings are more extensively discussed in a forthcoming study the de Tocqueville Institution has worked on in conjunction with the Milton and Rose D. Friedman Foundation.

The above trends have occurred at a time when the teacher unions, the American Federation of Teachers and the National Education Association, have come to represent the vast majority of public school teachers and risen as political forces in the country. Thus, unions' use of monolithic contracts has restricted opportunities for teachers and driven many high caliber individuals from the profession. Today public school teachers are nearly always paid based simply on their years of service and education attained. It does not matter what subject is taught, it does not matter if the teacher comes in a mere

15 minutes before class starts or spends two extra hours a day working with students.

In fact, it doesn't even matter how large the class size is. It is easy to see how many of our best and brightest teachers can become demoralized under such a compensation and professional structure. Furthermore, the unions' opposition to merit pay and vigorous defense of tenure adds insult to injury for many of these teachers.

There are a number of encouraging developments outside the Beltway indicating how teachers and students will benefit from reengineering. Teachers have found significant employment opportunities and satisfaction in more than 700 charter schools that have opened across the country, largely free of union rules and other administrative burdens. Low-income scholarships or voucher programs have also served as the catalyst for changes in public schools.

For example, John Gardner, a school board member in Milwaukee, has noted the city's voucher program puts effective pressure on the Milwaukee public schools to expand, accelerate and improve reforms long deliberated and too long postponed.

I respectfully submit that expanding opportunities for charter schools and voucher programs are two steps that Congress can take to facilitate more innovative and deserving pay packages for teachers. In addition, the planned marriage of the NEA and AFT should be scrutinized. This recently announced merger will create a de facto teacher union monopoly in the United States. It is hard to see how the megaunion will be more responsive to teachers' needs and open to more flexible contract arrangements. As the National Education Association is chartered by Congress and as the merger will directly impact all public schools and all public school teachers in the U.S., there is compelling need for such scrutiny.

Finally, Congress should examine and have quantified the cost of Federal and State mandates on regulations on education. The array of these mandates affecting schools appears to be significant and merits further study and investigation. Each of these four actions, expansion of charter schools and vouchers, expansion of voucher programs, scrutiny of union activity, and identification and reduction in the cost of education regulations have benefits in their own right and will help the reengineering of our public schools.

I thank the subcommittee for your time and look forward to your questions.

SEE APPENDIX K FOR STATEMENT OF MR. STEIDLER

Chairman **Riggs**. Thank you.

Barnett Berry is the Associate Director for Policy and State Relations at the National Commission on Teaching and America's Future in Columbia, South Carolina. Mr. Berry, thank you for waiting so patiently. Please proceed with your testimony.

STATEMENT OF MR. BARNETT BERRY, ASSOCIATE DIRECTOR FOR POLICY AND STATE RELATIONS, NATIONAL COMMISSION ON TEACHING

AND AMERICA'S FUTURE, COLUMBIA, SOUTH CAROLINA

Mr. **Berry**. It is a real pleasure to be here representing the National Commission on Teaching and America's Future. Let me first say that the commission is a bipartisan blue ribbon panel of 26 policymakers, including Republican and Democratic governors, legislators and chief State school officers who issued a major report in 1996, which many of you are all familiar with, "What Matters Most."

This report raised the ante, if you will, on teacher standards in this country and also offers a blueprint, a picture, of how to totally transform the entirety of the teacher development system so that every kid in America gets the kind of education he and she deserves. This past fall we released a new report, "Doing What Matters Most," which augmented the data and recommendations of our first report, speaking directly to the relationship between teacher development, teacher knowledge and expertise, and student achievement and equality.

I will do my best to stay within the 5 minutes here, Mr. Chairman. If you don't mind, I would appreciate if these two documents could be submitted as full reports for the record.

Chairman **Riggs**. We will make sure they are included in the record.

Mr. **Berry**. Let me speak to three major points and then deal with a couple issues I think are very important relative to dispelling some myths about the work of the commission. The first point I do not need to make more loudly than what Kati Haycock has just done in saying that first of all, first and foremost, teacher expertise is the major determinant of student achievement. Class size makes a difference, but not nearly as much as teacher expertise.

Point two, one of the greatest sources of educational inequality and educational outcomes in this country is the maldistribution, the unequal distribution of well-qualified teachers. I cannot say that enough here today. And finally, the nature and quality of teacher education, while teacher education is woefully uneven in this country, and alternative certification is woefully uneven in this country, good teacher education matters greatly and there are hundreds of studies to support such an assertion. I can give you great example after great example about how good teacher Ed programs prepare the kind of teachers they need in San Diego.

First of all, let me speak to some of the most important data points in the back of my testimony. I will show you a not so modest picture. It is a picture of a study, the results from the State of Texas, that shows quite clearly that teacher expertise, teacher knowledge explained by Master's Degrees, scores on licensing exams and experience accounts more than 40 percent of the difference in students' test scores in math and reading.

Again, in this study another 8 percent of the variance is explained by small schools and classes. What this means, as Mr. Hanushek said earlier, yes, class size can be powerful if you have got good teachers in there. Other studies, done in New York, Dallas, Texas, Tennessee and the like, also found that teacher quality was the major determinant of student achievement, but again minority and white students had extremely uneven access to highly effective teachers.

Another point that is real important, and I think today, later today or maybe even as we speak, the Third International Math and Science Study Report is coming out again. What we have found in the past is that the greatest numbers of unqualified teachers in the United States--those teaching without a certificate and without a minor in their field--are at the high school level in math and physical science. Which is where we do most poorly on these international comparisons of achievement.

In addition, I would like to tell you that our research shows clearly that the States that perform best in this country on the National Assessment of Educational Progress in math and reading are also those same States with the best-prepared teachers. They have the highest standards for those teachers and they are relentless. They do not hire unqualified teachers. They also require extensive education, more education, not less.

Finally, next point I should say, almost finally, while every parent understands what research seems to confirm, that teacher expertise makes the most important difference, there is a shocking number of entrants to teaching who are being hired without meeting the basic requirements, and guess where these folks are teaching? If you look at the second viewgraph I have for you behind my testimony, in fact the third viewgraph, you will see that four times as many teachers in poor schools and schools that primarily serve kids of color are teaching without a license in their field. We ought to be ashamed. We ought to be ashamed.

Most importantly, let me tell you that data also are clear about this point, that when poor students and students of color do get access to well-prepared teachers, they do quite well. In fact, their scores almost mirror the scores of other kids. In fact, a study that was just released of high- and low-achieving schools with similar, diverse student populations in New York City found that the differences in teacher qualifications accounted for 90 percent of the differences in those kids' achievement in math and reading. That is a powerful number.

Finally, let me say that teacher Ed matters for both teacher performance and student learning. I wish Mr. Martinez was here. Yes, Jamie Escalante was a great teacher, but he wasn't very good at the very beginning. Let me tell what you made him so good, though. He not only knew his subject matter well, he knew those children, and he combined the two in very powerful ways. There are a lot of great teachers out there that have learned to do that over time, like Mr. Escalante.

However, we know how to create teachers. In fact, I will tell you that the best teacher Ed programs in this country have certain characteristics. First and foremost, they require a minimum of 40 weeks of extensive clinical experience. So a prospective teacher actually knows before he or she is licensed how Johnny, Kiesha and Carlos learn to read and what they would do next when they find those three children have difficulties in reading.

In fact, one reason the commission has put a lot of weight and leverage on the National Board for Professional Teaching Standards is because that teaching examination does just that. It requires teachers to look at student work, no matter what background they come from, no matter what kind of learning they had prior to coming to school, and figure out what went wrong, what went right and what they would do next. It is a very powerful assessment, and I will tell you right now it is very rigorous, and only 33 percent of those teachers who are sitting for that exam are actually passing.

Let me say in closing that we know what to do. In fact, in the commission report we will--we have documented that virtually everything that we want done is being done somewhere in the United States of America. There is just no State or school district that has put all the pieces of the puzzle together.

We know that other countries that prepare teachers and do quite well in international assessments prepare those teachers much more extensively than we do. Instead of just any old bachelor's degree in education, they are talking about a disciplinary degree and two to three years of teacher education, most of it under the tutelage of expert teaches.

We also in this country--this bears greatly on the class size issue--in this country we do not do nearly enough to make sure our most important resources are put closest to kids. In this country only 43 to 50 percent, depending which study you look at, of the public school educators are actual classroom teachers. In other countries with whom we compete economically, it goes from 60 to 80 percent. We use those resources differently.

Think back to that Ferguson pie chart I showed you first. It is teacher knowledge, small schools and classes. It is the use of the knowledge. If teachers do not have the opportunity to use that knowledge, then it will all go for naught.

Finally let me say that the single most important strategy for improving student achievement is to create a system that ensures that the way teachers are recruited, prepared, licensed, selected, supported and assessed and rewarded are all in sync with each other.

I will tell you that I am a little perplexed by some of the myths that are being put forward here today about the commission. Yes, we are for more extended preparation for teachers and more rigor. Yes, that does take more time, but our kids deserve that. We also want more standards for teachers, and more standards and licensing which we do not have now.

Instead of more flexibility, I will tell you we have plenty of flexibility right now. Thirty States in this country have more requirements for their cosmetologists than they do for their teachers in terms of a license to practice.

Finally, let me say that, yes, we are looking for standards that are in sync with each other. We are looking for professional accreditation to be in league with licensure and advanced certification. The reason we do so, because every other profession in America does so. That is how they ensure quality.

SEE APPENDIX L FOR STATEMENT OF MR. BERRY

Chairman Riggs. Let me assure you and the other witnesses that your written statements will, along with any related materials or documentation, will appear in their entirety in the record and transcript of today's hearing.

Let me also stipulate that I think that there are born teachers, individuals with a remarkable gift, a God-given gift and an aptitude, a natural ability to relate to children, a love of learning, a love of that interaction. That all said, it seems to me that most teachers are still made. And I am wondering as you survey the literature and you look, and if any of the other witnesses want to comment, at our traditional teacher training, traditional teacher education at colleges and universities, as well as the preservice training, if it is weak on the apprenticeship aspect, whether we need, I think you referred to it as, clinical experience?

Mr. **Berry**. Right.

Chairman **Riggs**. Whether that needs to be longer, because it seems to me that we have many problems in the teaching profession; that that might be one. Another would be, I think, inadequate classroom observation and evaluation of new teachers.

And I could only relate to my experience in my home State of California and my five years serving on the school board in my hometown, including two years as board president. We were constantly frustrated, the elected policy decision makers on the school board, that we did not have enough observation and evaluation prior to a teachers being able to achieve tenure. California has very strong tenure laws, as you may know.

So respond to that if you would like.

Mr. **Berry**. That is an excellent question. There are about a dozen States in the country that do not require any student teaching in order to be licensed to teach.

In this country teacher education right now is under the auspices of State Departments of Education and State Boards of Education for the most part. There are a few professional standards boards that are out there right now. But for the most part it is under the auspices of the State Departments of Education.

There are a dozen States that do not require any student teaching. We know from research that extended clinical preparation, in fact extended preparation, there are studies that show as well that those teachers are more likely to stay in the profession and are more likely to be effective with kids and are more highly rated by their supervisors.

Chairman **Riggs**. You found significant variance from State to State?

Mr. **Berry**. Absolutely.

Chairman **Riggs**. Ms. Feistritzer says that there is no shortage of well-educated, highly competent teachers. You say that there is a problem with many, many teachers teaching outside their subject matter, which implies that they are not knowledgeable in that matter or they haven't been credentialed or certified in that subject matter.

My question is, is there an honest difference of opinion on the panel, and who is making these decisions to hire these individuals? If there is a problem, it seems to me that the problem is at the local level and can only be rectified at the local level. A very brief response from you, and then Ms. Feistritzer, a chance to respond.

Mr. **Berry**. Yes and no, the typical sort of response. There are plenty of teachers out there but they clearly are not available in the areas where we need them to teach, in the subject matters and the knowledge they need to have. Even so, teachers that were prepared five years ago are not the teachers who we need tomorrow.

Talented teachers of today and tomorrow have to know a heck of a lot more about learning differences, language differences. They need to know more about peer review and teacher leadership. They need to know more about the new curriculum standards that we are implementing on a State-by-State basis across the country, these kind of things that are not anywhere close to being in a teacher Ed program five years ago.

So the issue is pretty complex. I will tell that you we are producing enough and we have enough out there but they are not of the right kind. They won't teach in the right places. I question whether they have the right knowledge that we will need for tomorrow, at least the knowledge the children need.

Chairman **Riggs**. But you acknowledge hiring and firing decisions are made locally. And if we have a bunch of incompetent teachers and we have teachers who should not be teaching at least in a subject matter, that is a local problem. The question then is, who impedes or prevents the local decision-makers from addressing that problem?

Mr. **Berry**. In rural South Carolina you cannot find a physical science teacher, so they have PE teachers teaching. That is where Richard Ingersoll's data comes in. I cannot point my finger at the local school district. They do not have the wherewithal, the money, the financial system, the recruitment apparatus to get a good physical science teacher in that district.

Chairman **Riggs**. Somebody said something earlier about coaches teaching.

Ms. **Feistritzer**. First of all, I think you have your finger right on the most critical issue, and that is the selection and hiring practices of teachers. We not only have this like 4 million people with Ed degrees who are not teaching, but we are still cranking them out at about over 100,000 a year and not hiring anywhere near that level, so it is not an ancient history collection of people. They are still being produced.

I think you all need to really seriously look at why you are going to start distributing monies to more colleges of education. Why should we keep turning out numbers of people who have the credentials, who clearly do not intend to ever teach anywhere, when the demand is in rural areas and inner cities?

The hiring practices of teachers are such in this country that local schools or school districts hire who they want to hire. They hire substitutes. They hire paraprofessionals. They hire the coach's daughter. They hire who they want to hire. And they hire for vacancies.

And as many of us on your panel today were former teachers, you get your teaching assignment about the week before you start teaching in many cases, and it may or may not be in your field. That does not mean that a fully qualified person with a degree in that field has not applied in that district for a job.

I think rural South Carolina and rural California, and rural Kentucky where I am from, many, many States have tiny little schools in them. And they are never going to hire a Physics major to teach that one physics class that they may have in that school because of its size.

So I think this out-of-field teaching issue is very much related to the size of the school, where it is located, the type of community that it is in, and not because the people are not available or you cannot find them anywhere. It is just economically not feasible to hire in these outlying rural areas of the country a Physics major for every physics class that is taught. We will have to be much more creative about hiring and sending physics teachers to teach in different schools that are maybe 10 miles apart from each other.

But hiring practices, I think, in analyzing the supply and demand issue is the key issue. It is not teacher training.

Chairman **Riggs**. That is the problem. The supply might be limited, indeed very limited in that local job market or in that local school district area.

My time has expired. I want to ask one other quick question of you and Dr. Ballou and that is, as a matter of public policy--forget for a moment whether we are talking Federal, State or local or some combination--as a matter of public policy, aimed at attracting and keeping experienced highly qualified, motivated teachers, what would be the better way to go? A program that focuses on younger people, for example, like the Teacher Corps idea where taxpayers subsidize or defray college tuition, college, higher education expenses? Or a student loan forgiveness program for those who enter the teaching profession, or an alternative credentialed certification type of program where you are in fact deliberately recruiting or reaching out to people interested in making a mid-career, mid-life change to enter the teaching profession?

I want to give Dr. Ballou a chance to respond first. I have some other questions if we get to a second round.

Mr. **Ballou**. I am not sure why you want to choose. If there is merit to both ideas, why not pursue both?

Chairman **Riggs**. Which one has more merit?

Mr. **Ballou**. I think that the alternative certification has more merit, probably. The average age of a new teacher in this country is now about 28 or 29; really remarkable that people are entering teaching actually at that point in their work lives. I am not altogether sure why that is the case, so I am trying to find out.

Mention was made earlier of the fact that the teaching profession no longer does so well on talented and capable women who now have other career opportunities. But many of those women when they decide to have children recognize that teaching is a very good fit with parenting for scheduling reasons. And some of these women may be quite interested in spending 10 to 12 years as teachers before they then go on to pursue other career interests. I think there is much merit to pursuing alternative certification programs. That is it for now.

Ms. **Haycock**. If I might add, I think Dr. Ballou was right where he started. The fact of the matter is, we have a major crisis in cities and in rural areas. That is that we cannot afford to be an either/or.

As I mentioned, I was in San Jose last week. The starting salary for a teacher in San Jose Unified is $27,000 a year. Math and science graduates can start at $45,000 in any of the high tech firms in that area, all of whom have positions going begging now. They have teachers in San Jose who came to teach there, who now have been asking to get out of their contracts because they cannot afford to live there.

The fact of the matter is, we cannot afford to have a single strategy here. We have to use multiple ones that will get talented people into those schools with sufficient incentives and the preparation to teach well.

Chairman **Riggs**. I know you want to respond, but let me go to my colleague. I want to hear more discussion about Teacher Corps and credentialing. We will give everybody a chance.

Mr. **Miller**. Thank you very much. Since we apparently don't have a supply problem, we are right back to where we were this morning. That is the quality of the individual that is in the classroom.

I don't quite get it. You said that this is a problem because of rural areas. We can't get qualified people in the big urban centers where the vast majority of these people live; 80 percent of the people live on the two coasts, and in almost every area they are having this same problem. I don't quite get why we should not worry about this because rural areas cannot get physics teachers. The City of LA can't get anybody.

Ms. **Feistritzer**. In my testimony, written and verbal, I said the biggest problems are in the inner cities and in rural areas. The reason I zeroed in on rural areas for finding a physics teacher was the number issue. It is easier from a purely numbers, economics standpoint to find a physics teacher for New York City.

Mr. **Miller**. We are not doing it. Out-of-field teaching is not a minor problem in suburban communities and urban communities. It is a massive problem.

Ms. **Feistritzer**. It is a massive problem but it is greater in the areas where you have very tiny schools.

Mr. **Miller**. With all due respect, if those school districts want leeway, that is fine, but we now have the general proposition starting to become the teacher who is unqualified and out of field.

Ms. **Feistritzer**. That goes back to another point that I made, which is that it has much more to do with the hiring practices.

Mr. **Miller**. Let's go to the hiring practices. We heard from the Secretary of Education for Pennsylvania. In his testimony he said, "We proposed that those who have completed their undergraduate or graduate education with academic distinction and have passed the same licensure examinations that other prospective teachers take should be allowed to find employment and teach in apprenticeship programs in eligible public schools."

Ms. **Feistritzer**. I think that is fine.

Mr. **Miller**. So what is the rub?

Ms. **Feistritzer**. I think that is fine.

Mr. **Miller**. Except that I would expect that there are a lot of people, teaching alternative or otherwise, that couldn't meet that threshold. They haven't completed their academic work with distinction and they don't have the same licenses.

Ms. **Feistritzer**. I would argue that the people who are hiring these teachers regardless of whether they_

Mr. **Miller**. This is the State of Pennsylvania.

Ms. **Feistritzer**. Well, Pennsylvania, Texas, California, Indiana, the hiring practices occur at the local level and they very often don't have anything to do with the credentials.

Mr. **Miller**. But they hire pursuant to State law in most States.

Ms. **Feistritzer**. They are supposed to.

Mr. **Miller**. So they are out of compliance with State law?

Ms. **Feistritzer**. It is very common in this country to have qualified people, by whatever requirements the State sets forward, and for a local school district or a local school to hire a person who does not meet those qualifications for a variety of reasons.

Mr. **Miller**. So we are in the position where the Federal Government puts $8 or $10 billion into the system plus all the student loans, because local officials don't care enough to hire qualified people and talented people and enforce the State laws. We should just keep plowing Federal money into the system so we can have undistinguished teachers teaching. That is what you are leaving me with, is the fact that you are saying--

Ms. **Feistritzer**. I don't think you should keep dumping more and more money into the system.

Mr. **Miller**. This is a locally run system. It is governed by the State offices. The State offices provide massive exemptions, so that what you are saying is local districts can freely hire anybody they want, qualified or unqualified.

Ms. **Feistritzer**. I am not saying that they should.

Mr. **Miller**. That is what is going on. It is not because of Federal law or Federal regulation. We are financing a big chunk of this, certainly in compensatory districts we are financing a very big chunk of it, and we get saddled with the worst unqualified teachers there are.

It seems to me that if you are going to vote for the money, I appreciate all this business about devolution and local control, but it is starting to appear here as though the local entity's acting in a very irresponsible manner. Whether it is because they don't like the union or whatever the reason is, they are not willing to upgrade the system and we continue to look the other way.

Ms. **Feistritzer**. I think that, I personally think, and I have been analyzing this issue now for about 25 years, that you have your finger right on the biggest problem.

Mr. **Miller**. The minute that we suggest that we want to tie Chapter I money to the hiring of qualified teachers for the utilization of that money that somehow is taboo and the local people won't do it.

Ms. **Feistritzer**. But you should do that. I think you should be tying your money to--

Mr. **Miller**. I will give you the rest of the year to convince my colleagues. I hope you are as persuasive as you are here. That is the problem. We are now becoming enablers of a dysfunctional system because the Federal Government continues to put money into it and doesn't ask basic questions that I would ask as a parent of my two sons or a grandparent of my two granddaughters, which is who the hell is teaching this child, and what are the results that I may be getting?

Ms. **Feistritzer**. That is right. And it is in the numbers. Why are we turning out vastly more people in teacher colleges, many of which are subsidized with taxpayer money, that never intend to teach whether there is a job out there for them or not? Why are we doing that?

Mr. **Miller**. I would answer with a question because I don't know the answer. Taking much of the work that Kati has done, it would seem to me that if you have an oversupply of people willing to engage in a practice, raising the thresholds in terms of passage rates or certification or whatever the measurements are the experts want to use, we ought to be able to raise the bar in that situation. And as you point out, maybe not really risk, the notion is if you do that, you risk not having enough teachers.

You suggested that in terms of people who display some talent, background training in the a general population, there are enough bodies. The question now is, are they the best people we can get and are they qualified for that job?

One of the avenues is schools of education, where you can just kind of wander. It is like upper middle class white guys who go to law school until they figure out what to do with the rest of their lives. Other people I guess use schools of education. And they don't go teach, they go off and do something else. And then they run for Congress.

The point being that that is a marketplace that suggests that you can raise the entry level and the entry requirement. That is not the heavy hand of the Federal Government. It is just a return on all those loans and grants we are making. We might get a qualified individual to participate, which brings us again back to teacher training and qualifications because again if it is that kind of market, we ought to be able to extract the best people out of it.

Chairman **Riggs**. Congressman Roemer.

Mr. **Roemer**. Thank you, Mr. Chairman. I hate to interrupt Mr. Miller. He was on such a roll there, an interesting roll, too.

Just as George was talking about some of the problems we encounter, my staff handed me a "U.S. High School Seniors Lag In Science" article that is just off the wires from this morning when we started this hearing. And we have heard how bad it can be in some of our inner city areas, and the qualifications for and the credentials of some of our teachers.

Here is the latest study saying that even the best and the brightest of our American students, taking the toughest math and science courses, are at the lowest scores internationally in comparison with other countries. And when Secretary Riley was asked why is this, he blamed it on the dearth of qualified teachers and easy graduation requirements. He cited that about half of physics teachers have a major or minor in that subject.

Now we have got the whole spectrum here. We have the problem that Ms. Haycock has talked about in places in California and other places all around the country where we cannot get enough qualified teachers, particularly in high minority and inner city high poverty areas. And now we even have a problem with some of the best and the brightest in physics and math and so forth, where we are scoring with the Czech Republic and Australia and other countries in some of the gifted and talented courses. We have got a heck of a problem, a staggering problem here.

Ms. Haycock, you talked in your testimony about El Paso, the University of Texas and some of the things that they have set up. Can you elaborate a little bit more on how we go about setting up schools that are going to try to teach and train the next generation of teachers so that we don't continue to have the problem that we have encountered with current teachers?

Ms. **Haycock**. As I mentioned before, the El Paso story is primarily a story about leadership. It is what a set of people did out in advance of what a State required them to do in terms of beefing up the preparation of teachers. The lessons I think from Texas are the lessons that we are learning right now, as the State puts into place an accountability system that demands now from higher Ed institutions results that are much better than ever before. So now in the State of Texas, if your college or university does not produce teacher graduates who scored a particular level on the entrance exams into teaching, you are no longer allowed to teach or to prepare teachers.

That kind of accountability system for higher education for the first time, when coupled with a very tough accountability system in K-12, which as I mentioned earlier, sends very clear signals to schools. They have got to make gains and they have got to make gains with black kids, Latino kids, white kids, all kids. When you couple those two, you have got a powerful message to the system that says, produce better--better teachers and better students.

Now, our sense is that those kinds of efforts would be vastly sped if there were some incentive funding from the Federal Government that said, we have got a special problem in high poverty schools that we are going to allow you to get out in front of, like they have in El Paso, by providing you some dollars to beef up your program. But also by providing some loan forgiveness so that we can begin to provide real incentives for talented undergraduates who choose to teach in the high poverty areas.

Mr. **Roemer**. Let me stop you there. On the previous panel, and I think you were here, a couple people testified that loan forgiveness did not accomplish what we sought to accomplish, and that is getting more qualified people in inner city schools. You refute that?

Ms. **Haycock**. Yes, the loan forgiveness doesn't make much of a difference as loan forgiveness that forgives about $1000 per year. If you are trying--in San Jose, if you say, we will give $2,000 a year in loan forgiveness, but that same teacher could teach in the suburban district and make 34 to start, obviously you will not compete. If you have got a generous loan forgiveness program though, where you are forgiving more like $8- or $9,000 a year, then you are really providing a big-time incentive and, you are beginning to equalize these salaries with the suburbs.

Mr. **Roemer**. Do you feel like that would make a significant difference? You cited in your San Jose study, where people making $27,000 a year teaching cannot afford to even live in the school district. I know the real estate is a lot more expensive in San Jose, California, than it is in South Bend, Indiana. We have teachers that have some of the same problems.

Ms. **Haycock**. They told me a starter house in San Jose was $350,000. They basically are housing their teachers by asking retired teachers to open up their homes. Clearly, there is no single, easy answer to problems like the San Jose problems or the Los Angeles and so on. But I think my message to you is that it is real clear from these examples, like El Paso, that it is possible to make some real strides here if we focus on drawing the most talented undergraduates into programs, preparing them to teach in high poverty areas. And if we provide them with some incentives, that will make that possible.

Will they all stay in teaching for all their lives? No, they probably won't, but the point is, we have got some bright, intellectually able people into the profession, and we have given kids the chance that they need to succeed. That has to be our agenda.

Mr. **Roemer**. How long ago did the El Paso program start?

Ms. **Haycock**. '92.

Mr. **Roemer**. Have you been able to assess whether you are continuing to attract with the higher standards the best and brightest into that program, or are they going to other places?

Ms. **Haycock**. I think their sense is the same sense we have as we look at things nationally. You raise the standards, you attract more.

Mr. **Roemer**. And that is, absolute, you have that quantifiable research that you are still getting the best and brightest at the El Paso program?

Ms. **Haycock**. Yes.

Mr. **Roemer**. So it would make sense for us to set up something, possibly in title V, that would disseminate money as incentive grants. Not as a general block grant, but incentive grants to those schools that are currently doing these kinds of innovative things rather than just disbursing the money everywhere in kind of a cavalier fashion.

Ms. **Haycock**. Yes.

Mr. **Roemer**. Mr. Berry, you know you have been--

Mr. **Berry**. Your question about teacher education is critically important. Let me speak to one particular institution to give you a really concrete example of what really works.

It is actually the University of California-Berkeley elementary Ed program. They only graduate 20 a year, unlike most cash cow operations that you see on most State university campuses, only 20 a year in elementary Ed. It is a three-plus-two program. Mr. Hirsch would be very impressed about the content knowledge that these prospective teachers garner in their preparation.

But also the extensive pedagogical knowledge is combined with the content knowledge. They emerge with three minors in math, science and English. They have 4 years of clinical experiences where they actually spend time learning how children learn to read. And when children have difficulty, they are doing case study, they are doing research themselves as prospective teachers. This is not inexpensive teacher education by the way.

They also learn diverse strategies on how to teach reading, and they test them out. And they are tested on whether or not they can use those different approaches, and they use phonics and they use literature-based approaches in a greater way.

They also take a great deal of time in helping these new teachers, prospective teachers, learn how to interpret assessment data, not just standardized test scores but writing samples and the like. That takes skill well beyond what any old liberal arts major has before he or she goes to teach in the incredibly diverse schools of Indiana, California, or my home State of South Carolina. So it is a very powerful program. Principals who hire these teachers are just dying for them.

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Guess what else? They stay in the profession. The reason why is because they are very knowledgeable. Not only do teachers leave because of poor working conditions and poor salaries and inadequate induction; they leave a lot of times because they never were adequately prepared. They can never meet the high expectations they have for themselves and what they want to do with the children under their charge. But these UC-Berkeley students can do it and it is paying off. We just don't have enough schools of education or the right incentives to help all schools of Ed do this approach.

Mr. **Roemer**. Mr. Chairman, if I could have a little bit longer time, I think that is an interesting segue into something that was in your testimony, Mr. Berry. I am not sure if I heard you right.

You said in your example of Johnny and Kiesha and Carlos that when those children have difficulty learning from the traditional teaching method, that oftentimes teachers then have an extremely difficult transition into an alternative teaching methodology to help that child. And that only 33 percent of teachers can pass an exam to teach in an alternative method.

Mr. **Berry**. I was speaking of the National Board for Professional Teaching Standards, which is a complex set of assessments to ascertain whether or not teachers are highly accomplished. The main thing that a teacher has to do to pass that exam--only 33 percent pass that exam--is that they have to look at the work of diverse students and figure out where those students are. You are judged on whether or not you can analyze that student's work, where Johnny's difficulties are or where Carlos's difficulties are, and then move that child. That is how you are judged through this national board process because we want to up the ante on standards, the national commission does. And the national board, in its 10 years of research, which attests greatly to its reliability and validity, is a linchpin, we think, for the kinds of reforms to ratchet up the whole system.

Mr. **Roemer**. Thank you, Mr. Chairman. I hope we get to another round.

Chairman **Riggs**. We will, but we will have to be--do it briefly, because this hearing started at 10:00 and we are rapidly approaching 3:00 p.m.

Let me ask you, let me recognize Ms. Feistritzer. You did not get a chance to respond on the question of alternative credentialing. Please.

Ms. **Feistritzer**. It sort of ties in with several comments that have been made since then. First of all, I am a former Teacher Corps director in South Carolina, of all things.

I think you would be well advised to do both. I think Teacher Corps is the best program that has ever come down the pike for training people to teach in high need areas. It was a two-year on-site-based program. The tragedy of Teacher Corps is that it never really had a good data collection or evaluation of it done. But it was outstanding, and I think you really should revisit Teacher Corps.

Alternative teacher certification, I think, just makes a lot of sense. It gets everybody, I hate to be so pedantic about it, but it gets everybody sort of off the hook on whether this teacher education program is any good or not. Because alternative teacher certification, by its phrase "alternative," gives you an opportunity to look at alternatives, alternative ways to bring people into the teaching profession. And there are as many alternatives as there are people talking about them.

The really good alternative teacher certification routes and teacher preparation programs really start all over again. They look at who the population is that is available for teaching and really ask the questions, the really hard questions about, what is the best way to educate and train and license people for teaching today who come from these diverse populations such as midcareer changes and early retirees?

There are some excellent programs that have started from scratch that would meet the national board standards that would meet the national commission standards. I think that the Congress would be well advised, if you are talking about title V of the Higher Education Act, to set aside some money for developing alternative teacher preparation programs and colleges of education and teacher certification programs that might start out being district based, school district based.

One of the really outstanding things about the alternative certification program in Los Angeles Unified is that--and the best testimony you can get is from the people who have gone through these programs--is that, what they themselves report is that they do get the training that they feel has enabled them to be effective teachers. I think that you would get a lot more bang for the buck if you allowed people to start over again and develop some true alternative approaches to educating, training and licensing teachers.

Chairman **Riggs**. Do you think that might help us get at the problem of the need for more specialized teachers, particularly at the secondary school level? It occurs to me that perhaps alternative credentialing might lead to--and I know this is probably absolute anathema to the teachers unions--but to more part-time teachers teaching in the secondary schools, very similar to a large part of our community college instructional staff being essentially part-time instructors.

Ms. **Feistritzer**. Absolutely. Another thing I wanted to say about an advantage of alternative routes is that they are more tied to meeting a problem that I raised earlier, which is employment. What is the point of being trained if you don't wind up being employed? And many of the alternative certification programs that exist today are tied to that. You can't get into the alternative certification program unless you have an arrangement to be hired by that school district. Many of the district-based programs start out with the demand for the teachers in specific subject areas, as well as the regions that the demand is greatest in.

Chairman **Riggs**. Let me raise one other subject, because I would really be remiss in my responsibilities as chairman of the committee if I adjourned us without having a little bit of discussion about the teachers unions.

It occurs to me that the teachers unions are today a big part of the problem, but they could be a big part of the solution. It is hard to think that we are headed towards, possibly, with the merger of AFT and NEA, this one big, monolithic union. Since you represent, I think, pretty much an ideological cross-section geographically, from different parts of the country, you represent different disciplines and backgrounds, I would like each of you to respond.

I will stipulate at the beginning that teachers unions seem to be primarily concerned--some would say "preoccupied"--with the bread-and-butter collective bargaining, management-labor relations issues. I also fervently believe that by driving for strong tenure laws, which too often protect people who should be eased out of the teaching profession, this is sort of the flip side of the argument for alternative credentialing. Which too often prevents good, experienced people from getting into the teaching profession. It seems to me in striving for those tenure laws the focus on the collective bargaining issues, sometimes to the detriment or exclusion of issues about academic quality, they could be the driving force for improvement and change in this country. They could be the ones.

They could tomorrow start working on their own professional standards. They could be working with the schools of higher education. But my take on it is, they are, as I said, a big part of the problem. And it is frustrating because I think they could be a big part of the solution.

I want to go right down the panel and get your reaction to that briefly. Let us start with Dr. Ballou.

Mr. **Ballou**. I agree with what you said. They are a big part of the problem. I don't see any way they are going to be part of the solution. You say they could be working to develop new standards. Well, in fact, the National Council on Accreditation in Teacher Education, NCATE, which is--the idea is being advanced that that agency should have control over determining who is allowed to prepare teachers. The NEA and the AFT have about seven or eight of the positions on the executive board of NCATE; president, vice president, high officials of both unions are members of the executive board.

The NEA contributes some 300,000-400,000 a year in financial support to NCATE. They are actively involved. It is--their involvement is one of the reasons that I am so mistrustful of the activities of NCATE.

I think you have got it exactly right. The unions are a big part of the problem.

Chairman **Riggs**. It has been your observation that they are resistant to--

Mr. **Ballou**. They are resistant to this kind of change.

Mr. **Steidler**. I would even challenge the assertion that the unions have been that effective at getting additional pay for their members. Teachers are among the lowest paid professionals in the country today. Basically, the U.S. right now spends $117,000 for every public school teacher that is out there, whereas the current average teacher salary is just over $38,000, roughly one out of three dollars per public school teacher. In fact, among new teachers, the types of people whom we all want to attract into the public schools, there has actually been a 4 percent decline in their compensation, after inflation, from 1987 to 1994.

We have a system that is in place with these monolithic agreements that the unions have where they are driving out new people who want to enter the profession. That is because the highest amounts of compensation, the additional increases that come from their negotiations, go to teachers who have more seniority. And the first teachers to go are the new teachers who are entering. They are not protected by tenure; they are the first ones to get laid off.

I think that is a significant issue to look at here, because if we get these people and they are in a new class and very dedicated and very enthusiastic, but a year or two later are going to be out or are just going to be extremely low paid, that is not something which is in the public's best interest here.

Along the same lines, there is also a tremendous amount of political activity that both unions are involved in, by their own accounting, and this could most likely be challenged in an arbitration or some other matter. The unions will indicate that about 70 percent of their dues money right now goes to collective bargaining, contract administration and grievance procedures that are out there. When you consider that the NEA and AFT and their State and local chapters have combined revenues of 1.2 billion a year. The 30 percent of 1.2 billion which is not in collective bargaining activity and for political activity and other endeavors is, first of all, an awful lot of money that the dues-payers are--the teachers are shelling out and a lot of money that is going toward noncore activity.

I think that the unions in terms of being successful, we have to give the unions credit for one thing, and that is being effective at perpetuating agreements that are similar in focus. They have the staffing infrastructure to perpetuate agreements. And share that information with their membership and negotiate agreements that, while they are primarily going to reward or nearly exclusively reward teachers based on years of service and the degree obtained, they are nonetheless skilled negotiators with school boards and are out there getting these major agreements implemented.

Just to contrast that, the National School Boards Association, an organization that has revenues of about 17 million a year, which quite dwarfs the NEA and AFT combined, I don't think you can underestimate the impact that they are having on public education. It is something, which merits further scrutiny, particularly in light of the merger discussions.

Ms. **Feistritzer**. I don't purport to be an expert on the unions. The biggest problem I have with the teachers unions and have had over the years has been that they do protect the mediocre and in some cases the incompetent. I think that is unconscionable.

It is very hard to get rid of bad teachers. I think they may have a lot to do with the hiring practices problem that we raised earlier. However, I have been very encouraged that both of the teachers unions have been favorably disposed to the concept of alternative teacher certification, and I must say that sort of surprised me. But they have been on the sidelines; they have not jumped into that issue pro or con. I commend them for that.

Chairman **Riggs**. You are saying that by their staying neutral on that, that means they are favorably disposed?

Ms. **Feistritzer**. For the NEA, I think that is what that means.

Ms. **Haycock**. The truth is, our experience is quite mixed. In some of the local work we do around the country in Long Beach, in parts of Los Angeles and Arkansas and New York, unions are, if anything, at the head of the pack in terms of change. In other communities we are working in, including Philadelphia, unions are very, very different than that.

So there is no neat answer to your question, are unions the problem or are they part of the solution? I have been among those that have been skeptical about the efforts to reinvent the unions. But I have actually, mostly because of local experience, become a little more optimistic that those will have some effect. That these are actually sincere efforts, it would seem, to draw unions into new roles as really professional organizations. I think we could actually speed that along if collective bargaining were restricted to bread-and-butter issues, but I think we ought to be pushing it and encouraging it and helping leaders in what is obviously a very tough task.

Mr. **Berry**. I look forward to answering this question. Let me first say that unions are no more the problem than administrators who hire teachers, legislators who pass overprescriptive laws or researchers who do shoddy analysis of other people's work.

Yes, unions have been obstacles, but no more so than many other groups. I will tell you, as Kati has just suggested, some of the best work that is being done in this country right now is being done and led by the unions.

I would love for you to turn, as I spoke to Representative Roemer about earlier, to the case study of Cincinnati where the unions have been working with the administration and the school board for 10 years now. They have the most powerful form of peer review based upon real teaching standards which very few States and districts have in this country. And now the unions, where the best teachers involved in the review of other teachers are getting rid of bad teachers at 10 times the rate when only administrators were involved.

You show me another district, another State organized traditionally in terms of teacher evaluation and the like; you will not find, you will not give me data like those. In Cincinnati also, you will find their best teachers being paid $7,000 a year more. They are beginning to identify those teachers to the National Board for Professional Teaching Standards. With $7,000 a year more, they are expected to teach children, not leave the classroom part of the day and work at the University of Cincinnati in their new teacher

Ed program as well as review their colleagues and new teachers.

Finally, there is good--there are good studies and good data, the Rand Corporation did a study several years ago looking at unions. We all know Maslo's theory--self-esteem, highest levels of the pyramid when you are self-actualized; if you are down at the bottom level of the pyramid, all you kind of focus on are the bases.

Guess what the study found? Unions that had the bread and butter taken care of, they do things like Cincinnati.

I would encourage you to look hard at what that means. The presence of both ATF and the NEA, which serve on the commission, have been strong proponents of peer review for the rest of the country. Tenure has not worked, primarily not because of tenure per se, but because of shoddy evaluation systems that have been driven by incompetent practices and ill-conceived plans out of State departments and school districts alike. Good teacher evaluation will get rid of bad teachers any day of the week.

Chairman **Riggs**. Are Cincinnati teachers affiliated with the NEA?

Mr. **Berry**. AFT.

Mr. **Roemer**. I will be brief. Mr. Berry and I were talking in between the two panels. I would just add that Chicago public school reform has also taken on, through union cooperation, reconstitution of schools, closure of schools, and firing of bad teachers. The unions are participating in solving the public school problem.

Mr. **Ballou**, I would like to ask you a question about alternative teacher certification, something I am very interested in. What studies are out there that indicate that the average age of the beginning teacher is now 28 or 29 years old?

Mr. **Ballou**. Those data come from the National Center for Education Statistics' school and staffing surveys, just a large, nationwide, representative sample of teachers; and among the things they asked them is, how old are you and when did you start teaching?

Mr. **Roemer**. What kinds of backgrounds? Are we finding they are coming from different kinds of backgrounds, similar backgrounds, what kinds of professions?

Mr. **Ballou**. I am glad you asked that question because I can't answer it. You would think that would be exactly the kind of question I ought to be able to answer. I can't because of the inadequate data collection that goes into that survey.

What you ought to do is call up the Department of Education and say, let's get some more longitudinal information about what these people have been doing before they decided to teach. We would all like to know.

Mr. **Roemer**. What about any kind of information that we can glean from midcareer changes or early retirement at 50 or 55 or 60 or 65 and people that want to go into teaching? Have there been studies of that phenomenon and how we could take advantage in a positive way of people coming in with great experience to help us meet the crisis that we have been hearing more and more about today?

Mr. **Ballou**. There may have been. I am not familiar with them. You might want to approach States that have fairly elaborate alternative certification programs and ask them what kind of internal studies they have done. New Jersey is one such State, and I know they have looked internally at their program. I am not sure they will have the answer to that question. Virginia is another State that has a fairly extensive alternative certification program.

I would just like to add one point, I think alternative certification ought to be open to anybody. You don't have to be 30 years old or out of school for 7 or 8 years. If you have ability and interest, even if you have decided one year after you got out of college, I wish I had prepared to become a teacher, why not give an individual of promise that opportunity?

It is an unfortunate feature of a lot of the current programs that there are actual time limits. You have to be out of school for five years before you can qualify for this program. You are missing people at a point in their life when they are quite mobile and moving from job to job. So there is another example of where we need more flexibility.

Mr. **Roemer**. None of us ever legislate around here by anecdote but there is an anecdote on this alternative certification about the man who worked with H&R Block, I think his name was Thomas Block. He brought great understanding of mathematics and accounting and all other kinds of lifetime experiences to the teaching profession. He wanted to step down from a $600,000 a year job and teach, and he couldn't go into the public school system to teach. He ended up in a private school where he is now still teaching.

And we should be able to find some ways to do those kinds of innovative things for the public school system while not tolerating teachers that cannot do the job or let that teacher that is poorly trained through an education system into the system. I think that there are some ways through the flexibility of this system to build and construct a better way of doing this. I think that the alternative teacher certification issue, while not a panacea and a silver bullet, is certainly part of an interesting way to get at the problem.

I thank you, Mr. Chairman.

Chairman **Riggs**. It occurred to me, as you were saying that, maybe we ought to have alternative certification for former Members of Congress.

Mr. **Roemer**. I am not sure anybody would want me, Mr. Chairman.

Chairman **Riggs**. I am just going to close by asking--unfortunately, Mr. Miller is not here, but I certainly will follow up with him on this. I am intrigued by his parents right-to-know proposal, but it seems to me that if you follow that logic, it then has to lead to a parent's right to choose.

I am wondering, Mr. Steidler, if you have seen anything in your travels and studies that would indicate that parental choice might have the effect of improving teacher quality?

Mr. **Steidler**. Sure. I think a couple of things come to mind in that respect.

One is, when we talk about the issue of choice, we should keep in mind that, first and foremost, those children who are in horrible schools, as soon as they get an option to go to a better school, are going to be getting a better education. That is out there and that is something that for their sake is extremely important and very good in and of its own right.

I would just like to share with the committee some comments from Mr. John Gardner out of Milwaukee who is the only elected member of the school board elected on a city-wide basis and who is a liberal Democrat. He attributes a number of major improvements in the City of Milwaukee's public schools to the fact that there has been a small-scale voucher program. Specifically, the fact that seven innovative schools have been exempted from burdensome administrative and contractual requirements, the fact that the city created the highest high school graduation standards in the country, which will be starting in the year 2004, the fact that there has been a significant expansion of specialty schools, Montessori, language immersion, college bound programs in minority areas, and the fact that there have been improvements in labor contract negotiations and that the city is better able to fire incompetent teachers.

He has also observed that the choice program in Milwaukee is also being discussed in the courts right now. His sense is that when the pendulum swings against the choice program in the courts, you can almost sense amongst the school board more reticence about enacting reforms like this and common sense approaches that go forward.

I think that is some pretty telling information.

Chairman **Riggs**. Thank you.

I also will close just by saying that it occurs to me in looking at the research that decentralization and site-based decisionmaking is another way of empowering teachers and improving teacher morale. I hope that is a good argument for the other body, as we refer to them, for the Senate to take up our bipartisan legislation, Congressman Roemer's and my legislation, that would allow the use of Federal taxpayer funding to encourage States to create more charter schools.

I very much appreciate again your participation and your input. It has been extremely valuable. I also want to thank you for your patience in basically indulging us as this turned out to be a full day's hearing. With that, the Subcommittee on Early Childhood, Youth and Families hearing on teacher reform stands adjourned.

[Whereupon, at 3:15 p.m., the subcommittee was adjourned.]

APPENDIX A- STATEMENT OF MR. RIGGS

THE HONORABLE FRANK RIGGS
HEARING ON TEACHER PREPARATION INITIATIVES
SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES
FEBRUARY 24, 1998
WASHINGTON DC

Good morning. I would like to take this opportunity to welcome each of you to our hearing on the very important issue of teacher preparation.

All children in this nation deserve an education which provides them with the skills and knowledge necessary to lead a successful life. Although there is little disagreement over this goal, there is certainly no consensus on how it can be achieved - be it through school vouchers, charter schools, or standardized testing. These debates thus are sure to continue. Recently, renewed attention has been given to another important aspect of ensuring a quality education for our children - classroom teachers.

Specifically, questions have been raised about the quality of our Nation's teacher workforce, the quantity of qualified teachers, the adequacy of teacher preparation, and the narrower issue of the impact of classroom size on the ability of teachers to teach successfully.

Over the past year, a number of bills have been introduced in Congress that attempt to address these issues. Representative Paxon has introduced legislation that would redirect the funds of several present federal programs to enable States to hire many more new teachers. The President's 1999 budget took this one step further by proposing a multi-billion dollar new program to reduce class size.

Before considering these proposals, we must first take a closer look and carefully assess perceived problems. Is there truly a shortage of teachers? Does classroom size matter? Are teachers well qualified, and if not, is it because colleges and universities fail to adequately prepare them by focusing too much on "how to teach" while neglecting "what to teach?"

If these are, in fact, the problems, how best should they be addressed? Can teacher shortages be alleviated through expanded alternative certification programs? Can classroom sizes be reduced at the local level by shifting administrative positions to teaching positions? Can teacher quality be improved by instituting strong accreditation requirements for teacher colleges and universities, as well as tougher tests for teacher certifications? And of particular importance to the Congress, what is the proper role of the Federal Government in crafting and implementing the necessary solutions.

These are just some of the questions we have the opportunity to discuss today with leading experts in this field, as well as with State officials who are on the front lines addressing these issues. Hopefully we will all come away with a much better sense of not only the problems we face in ensuring a quality education for all of our children, but also how best to achieve this goal.

APPENDIX B- STATEMENT OF MR. MARTINEZ

Statement of
the Honorable Matthew G. Martinez
Ranking Member,
Subcommittee on Early Childhood, Youth and Families
Hearing on "Teacher Training"
February 24, 1998

GOOD MORNING, I AM PLEASED TO JOIN CHAIRMAN RIGGS IN WELCOMING THE WITNESSES BEFORE THE SUBCOMMITTEE TODAY. THE TOPIC OF THIS HEARING - TEACHER TRAINING - IS INDEED IMPORTANT AND I AM VERY INTERESTED IN THE PERSPECTIVE OF THE WITNESSES.

TEACHERS ARE THE CORNERSTONE OF OUR EDUCATIONAL SYSTEM. I MAY NOT HAVE BEEN HERE TODAY, AS A MEMBER OF CONGRESS, IF IT WERE NOT FOR A CERTAIN TEACHER WHO REALIZED I HAD PROMISE, TOOK ME ASIDE AND HELPED ME REACH MY POTENTIAL.

CLEARLY THE TRAINING WHICH TEACHERS RECEIVE - BOTH PRESERVICE AND INSERVICE - IS VITAL TO THE EDUCATIONAL ACHIEVEMENT OF OUR NATION'S STUDENTS. PRESIDENT CLINTON HAS ALSO REALIZED THE VITAL ROLE OF THE TEACHER THROUGH HIS PROPOSAL TO ASSIST LOCAL SCHOOL DISTRICTS TO HIRE 100,000 TEACHERS OVER THE NEXT FEW YEARS. NOT ONLY WILL THIS LOWER CLASS SIZE, BUT MY HOPE IS THAT THIS PRESENTS US WITH AN OPPORTUNITY TO ENSURE THAT THIS NEW CROP OF TEACHERS HAVE THE TOOLS NECESSARY TO POSITIVELY IMPACT OUR NATION'S STUDENTS.

IN 1996, THE NATIONAL COMMISSION ON TEACHING AND AMERICA'S FUTURE, RESTARTED SIGNIFICANT NATIONAL DEBATES ON TEACHER TRAINING AND QUALIFICATIONS THROUGH ITS RELEASE OF "WHAT MATTERS MOST: TEACHING FOR AMERICA'S FUTURE". THIS REPORT MADE BOLD RECOMMENDATIONS FOR REVAMPING THE METHODS USED TO PREPARE OUR NEW TEACHERS, AND UPDATE THE TRAINING AND SKILLS OF THOSE PRESENTLY IN THE PROFESSION. THE REPORT CONTAINED WELCOME ADVICE FOR MANY OF US WHO HAVE STRUGGLED WITH HOW WE CAN BEST ENSURE A HIGH QUALITY, PROPERLY PREPARED TEACHER WORKFORCE.

WE ARE FORTUNATE TO HAVE A WITNESS FROM THE COMMISSION ON THE SECOND PANEL TODAY, MR. BARNETT BERRY, AND I AM ESPECIALLY LOOKING FORWARD TO HIS TESTIMONY.

THANK YOU MR. CHAIRMAN.

APPENDIX C- STATEMENT OF MR. PAYNE

DONALD M. PAYNE
10TH DISTRICT, NEW JERSEY

COMMITTEES
EDUCATION AND THE WORKFORCE
INTERNATIONAL RELATIONS

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Rep. Donald M. Payne
Statement for Subcommittee Early Childhood, Youth and Families
Hearing on Teacher Training
Tuesday, February 25, 1998
10 a.m.

Thank you, Mr. Chairman. I would like to first commend you on holding a hearing on this important issue. It seems that the need for better qualified teachers and teacher professional development has been a consistent theme in all of the hearings that we have held in this Subcommittee through the years. Today, we may debate the effectiveness of exact methods designed to improve the education of future teachers and ways to recruit teachers, such as how to improve teacher training colleges, how to make the certification process more rigorous, and the effectiveness of alternative licensing. However, the most important need is to raise the level of debate around what is surely to become a crisis in our public schools as the need for more qualified teachers will increase with the student population in the next ten years. A publication I came across last year from the National Commission on Teaching and America's Future, who is represented on our panel today, included a study conducted by Ronald Ferguson and published in the Harvard Journal on Legislation that found teacher qualifications accounted for 40% of the variables for success of students test scores. Other studies and practical common sense tell us that we can not ignore the need to improve and increase the pool of teachers in this country. While all schools need to be supplied with qualified teachers, minority students and students in high poverty areas seem to be deprived of such teaching staff disproportionally. According to the Education Trust, also represented on the panel today, about one in three high school English classes in high poverty schools are taught by an under-prepared teacher. I believe that if we are truly committed to improving education, and I hear from both sides that we are, then we can not ignore the need for better qualified teachers. I hope that the conversation and discussion we have today can further move our efforts toward providing children the best teachers and teachers the best resources and training possible. Thank you, Mr. Chairman.

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APPENDIX D- STATEMENT OF MR. HICKOK

Testimony of Pennsylvania Secretary of Education Eugene W. Hickok
Subcommittee on Early Childhood, Youth and Families
February 24, 1998

Good morning. I am Eugene W. Hickok, Secretary of Education for the Commonwealth of Pennsylvania and a founding member of the Education Leaders Council (ELC). The ELC is a national organization of reform-minded state education chiefs from Arizona, Florida, Georgia, Michigan, Pennsylvania and Virginia, as well as state education boards, individual state and local education board members, and other officials from twenty-nine states.

I am honored to have the opportunity today to discuss ways in which we can improve and strengthen the teaching corps throughout the nation, for there is no single element more essential to the success of our students than excellence in teaching.

Today I will provide you with an overview of Pennsylvania's teacher preparation proposal and will share my perspectives on any national efforts to improve our nation's teaching force. I believe that the course we have chosen for Pennsylvania could certainly serve as a model for the nation.

In Pennsylvania, we have embarked on an ambitious initiative that will ensure that our students have access to competent, qualified teaching. Governor Tom Ridge's Teachers for the 21st Century initiative articulates clear guidelines and standards for the young men and women preparing for this vital profession -- standards that we believe will make Pennsylvania a national leader in educational excellence.

In 1986, some of the most eminent educators in America formed the Holmes Group and developed the principles for Tomorrow's Schools of Education. The Holmes Group recently stated:

"Competence in subject matter requires that education students experience first-rate learning in the liberal arts... Prospective educators taking a content course in English or chemistry or mathematics should sit alongside liberal arts majors even at advanced stages. Education credentials should not be printed with shoddy ink. Tomorrow's Schools of Education will therefore refuse to admit or recommend for a teaching license any student whose studies in the arts and sciences have been diluted in any way whatsoever."

I believe it is essential for those at both the national and state levels who are considering modifications to the process for preparing America's teachers to closely examine the above statement, as it is precisely the course we intend to follow in Pennsylvania. We all must work to make the dream of Tomorrow's Schools of Education a reality.

In Pennsylvania, the reforms we propose address four areas in the preparation and certification of teachers:

- more challenging admissions standards for schools of education;
- rigorous academic and curricular standards in teacher-training programs,

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- higher qualifying examination scores for teacher certification; and
- alternative routes to teacher certification.

While states have considered or enacted measures to reform teacher preparation and/or certification, no other state has instituted a comprehensive reform package of this magnitude. Pennsylvania's four-pronged initiative, coupled with current professional development and recertification efforts, offers a comprehensive strategy to ensure excellence in the classroom. Together, these measures provide a check at each sequential step in the teacher preparation and certification process.

A teacher is a student's guide to a world of learning and knowledge. It is simply common sense that a prospective teacher must demonstrate strong commitment to academic excellence in order to help our young people achieve the high standards on which the future of this Commonwealth rests. When in place, Pennsylvania will require that candidates for teacher-training programs complete at least three semesters of college-level, general education courses and attain a 3.0 grade point average to be admitted to a teacher-training program. Pennsylvania will be the **only** state to require **ALL** approved colleges of education to meet this rigorous requirement for admissions.

Recognizing that there will always be students of high promise who develop late, our standards allow the institution to enroll up to 10 percent of candidates who do not meet this GPA, if exceptional circumstances justify admission. Moreover, candidates who do not attain the required GPA certainly have the option to work hard for another semester or more to meet the academic challenge of this requirement. But the bottom line is that a teacher must be an example of academic excellence to teach students to be excellent.

The 3.0 requirement is based on college course work **exclusive of education courses**. Many people who have advised us in crafting the proposed standards have noted the problem of grade inflation and expressed concern that a 3.0 requirement will encourage even more grade inflation. As we examine the problem, it is clear that the liberal arts programs on which the 3.0 admission requirement will be based have generally maintained rigorous standards. Our State System of Higher Education, which produces over half the new teachers in the Commonwealth, helped us in this data analysis and demonstrated that system-wide in 1995-96:

- The average grade in an education course is 3.3
- The average grade in a humanities course is 2.83
- The average grade in a mathematics course is 2.30
- The average grade in a natural science course is 2.49

At one system university, 78 percent of the grades awarded in education classes were "A's," while only 18 percent of the grades in English classes were "A's."

Indeed, this trend is reflected nationally as well. According to data collected by the U.S. Department of Education from 1992-93 graduates, the average GPA awarded in education courses was 3.41 compared to 2.96 in social science courses. It fell to 2.67 in science and engineering.

The 3.0 requirement, based on liberal arts courses, will be an incentive to prospective teachers to genuine academic achievement. We believe that the 3.0 GPA requirement will encourage prospective teachers to be all they can be as scholars and thinkers, as they prepare to be the mentors of our children.

Our proposed standards will require prospective secondary education teachers to fulfill the same course requirements as their classmates majoring in a specific discipline. This has always been best practice in preparing teachers, but many preparing institutions have increased their teaching methods requirements at the expense of vital content-area studies. In an analysis of the mathematics requirements at fourteen teacher-education programs at public universities, we discovered that nearly all of them had less rigorous requirements for a secondary education-mathematics degree than for the baccalaureate major. Often a demanding class in calculus would be replaced with a "History of Mathematics" class for prospective teachers, for example. Key areas such as Differential Equations, the study of comparative rates of change crucial for Advanced Placement work in math and physics, would be part of the baccalaureate curriculum but omitted from the teacher's curriculum. One finds similar erosion of the academic content areas in other secondary education preparation programs, especially in the natural sciences.

The teachers who will take our children into the next century - especially in mathematics and science - must be masters of their academic areas and unflagging in their intellectual energy and commitment. We, therefore, consider it common sense that these professionals to whom we entrust our children must fulfill at least the same content-area requirements as their peers majoring in liberal arts disciplines. And the 3.0 grade point average (GPA) necessary to enter the school of education must be maintained in both professional educator courses and in the academic discipline that the future educator intends to teach.

We want teachers who understand the principles of learning, but no matter how nurturing or child-centered a prospective teacher might be, candidates whose knowledge base is so thin as to miss very elementary questions cannot be entrusted with the education of our youth. What we seek in a teacher is a professional with high subject area skills and the ability to inspire the young to learn and achieve. A teacher with weak academic skills cannot help students meet the demands of the next century.

We all must aspire to improve the quality of our teaching force by thinking outside the box. We need a route of entry into the teaching profession for those highly qualified individuals who do not come to the classroom by the traditional professional educator route. Several other states have successfully pioneered alternative certification systems and have thereby greatly enriched their teaching forces. We propose that those who have completed their undergraduate or graduate education with academic distinction and have passed the same licensure examinations that other prospective teachers take should be allowed to find employment in teaching apprenticeship programs at eligible public schools. Alternative certification will enrich our classrooms, especially in many of our urban and rural areas, where school officials are often hard-pressed to find individuals with the dedication and expertise to serve students in those often challenging environments.

It is a sad irony that accountants must meet higher licensure standards than our teachers. We must make the qualifying scores high enough to be a meaningful indicator of skill. While taking account of issues of teacher supply, we will move our qualifying scores towards the national average. Pennsylvania teachers should be at least that good.

Recently, much attention in Washington has focused on education and education reform initiatives, such as those that have been embraced by many organizations including the Education Leaders Council. As longstanding believers in the notion that our states and locally elected school boards should drive education policy, I believe any federal action with respect to new education policy should provide for optional state participation in order to encourage rather than restrict innovation in education reform.

For example, the concept of national teacher certification periodically resurfaces as a possible way to improve the nation's teaching force. The Teacher Preparation Initiative I have outlined today goes far beyond any measures for national certification currently under consideration.

The National Council for Accreditation of Teacher Education (NCATE) program approval process is extremely labor intensive and very expensive for schools that seek the council's accreditation. It places far less emphasis on the rigorous academic quality measures that will be required under Pennsylvania's initiative. NCATE-approved schools often have courses, particularly in mathematics, that are listed as courses for education majors. We fully support, indeed have modeled, the Holmes Group's rejection of the process of "segregating education students from other students studying the same discipline or providing them with less challenging content...". While we applaud NCATE's recent initiative emphasizing performance measures in their accreditation process, our proposed 3.0 GPA requirement and higher minimum passing scores on certification exams move Pennsylvania far ahead of these efforts.

Similarly, with only two of the 13 standards established by the National Board to evaluate Master Teachers, I am not convinced that this distinction rivals the rigorous content preparation that will be required for all teachers under Pennsylvania's proposal. While we are very interested in portfolio assessment and performance assessment, we ask for clearer evidence of the National Board's commitment to the subject mastery of the teachers it certifies.

As we move into the next century, it is increasingly urgent for the master teachers who will inspire and lead their colleagues not only to be competent in their academic disciplines, but to excel in them. The sign of a master teacher is not only excellent classroom skills -- but as common sense dictates -- the deep mastery of academic subjects. This mastery is particularly important in the areas of science, mathematics, technology, and foreign languages if our teachers are to transport our students to the heights of academic achievement realized by many other countries.

While we watch the National Board with interest, we perceive its emphasis, like

NCATE's, to be too weighted in the traditional School of Education mind set of methodological training. Our experience in Pennsylvania has been that NCATE-approved schools over-emphasize education methods courses at the expense of content-area studies vital for teachers' future success and professional stature.

So today, I urge you to take a close look at what we are working to accomplish in Pennsylvania and consider the many implications of additional federal involvement in the preparation of our teaching force. Proposals such as that which has been unveiled in Pennsylvania will not by themselves create the level of educational excellence that all of us seek. That is a task that students, teachers, parents, professional associations, and state legislatures and policy-makers must move forward on together. But by committing ourselves to making good practices the norms that are required for becoming a public school teacher, we send a powerful signal of the ambitious course that Pennsylvania is taking to ensure that our students will be able to compete and excel in the global marketplace of the 21st century.

# # #

APPENDIX E- MR. HIRSCH

Congresional Subcommittee
on Early Childhood, Youth, and Families
Hearing on Teacher Preparation and Classroom Size Reduction
Written Testimony 24 February, 1998
E. D. Hirsch, Jr

Contents:

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II. Class Size: A Question of Trade-Offs
III. Subject-matter Programs for Teachers
IV. Alternative Certification
V. Desirable Constraints on Block Grants
VI. Scientific Reliability
VII. Statement on Federal Grants or Contracts
VIII. Biographical Data on E. D. Hirsch, Jr.

I. Introduction: Oral Testimony

I have been asked to comment on initiatives for improving teacher quality and for reducing class size. The class-size issue cannot be dealt with briefly. It entails a lot of complex trade-offs in particular circumstances. I discuss this matter somewhat more fully in my written testimony. Small class-size is mainly important in grades one and two, when the teaching of reading is paramount. My focus is on improving teacher quality.

In that effort it would be unwise to spend any taxpayer money that finds its way into schools of education. Schools of education, are currently the origins of our problems, not their solution.

Still more generally, it is undesirable to channel money to administrative entities that are populated by education postgraduates or ex-professors of education, all of whom tend to share a self-defeating emphasis on process rather than on knowledge. Unfortunately, this caveat applies to most state departments of education, to most accrediting organizations like NCATE, and to many grant-giving organizations like the education division of the National Science Foundation. I am told that you recently received sound scientific advice about reading not from the National Science Foundation, whose education division is dominated by ideology, but from the National Institutes of Health, which keep a strong connection with mainstream science.

The powerful status-quo organizations like education schools and state departments of education are perpetuating our problems rather than relieving them, because they are animated by guild slogans rather than by mainstream science concerning what actually works. Independent-minded people within these status-quo institutions are silenced by social pressure to insure their intellectual conformity.

Congress needs to help the public break this intellectual monopoly. We should be wary of contributing to its continued dominance. When you hear anti-intellectual and anti-knowledge slogans like "hands-on instruction," "higher-order thinking skills," "rote-memorization," "drill-and-kill," etc., my strong advice is to harden your hearts, and place your collective hands over your wallets and purses.

In my recent book, "The Schools We Need", I explained how this anti-intellectual monopoly arose, and why it persists despite its practical failures. Basically, it persists because sentimental ideas about educating young children have come to dominate our educational views, not just in education schools, but also, more broadly, in American culture. These sentimental ideas go back to 19th century romanticism -- for example to the notion that children should grow like plants rather than be molded like clay. The term, "Kindergarten," imported from German romanticism, means "Children-garden," -- that is, a garden where children should flourish like plants. Needless to say, this idea was contrary to the earlier principles ennunciated by Jefferson that public education should steel children against their natural impulses, rather than indulge them, and should inculcate habits of diligence and rectitude, as well as provide us with enough factual knowledge to govern ourselves.

The short and long of this conflict of ideas has been that romantic notions about education, as impractical and unsound as they have turned out to be, continue to drive out sounder Jeffersonian ideas, and continue to monopolize our schools of education.

For many decades now, natural process has been stressed over "artificial" knowledge in our elementary schools. This has been a disservice to all our children, but most of all to disadvantaged children, who receive little of the enabling knowledge they need from their homes.

The urgency of overcoming this romantic, anti-knowledge tradition has led me to some positive suggestions for Federal funding in my written testimony. The goal of those suggestions is to give existing and future teachers the subject-matter knowledge which they have been denied, and which their students need. I suggest ways to encourage alternative means of teacher certification, and ways to structure state block grants so that they will be controlled by subject-matter specialists rather than purveyors of process. The strategic aim of these suggestions is not to dismantle schools of education, but to give them incentives to change. The main goal is to provide teachers with training that accords with what mainstream science has shown to work effectively. In my written testimony, I have appended some remarks on ways to insure such scientific reliability when devising specific programs or block grants to the states.

Thank you.

II. Class Size: A Question of Trade-Offs

The empirical evidence on the benefits of reducing class size is so mixed and contradictory, and so disconnected from adequate theory, that skepticism is warranted before spending large amounts of money without adequate and detailed justification.

Context sensitivity: Some theoretical explanation is needed for the great success of large class sizes in Asia and elsewhere (e.g. France), and the inconclusive evidence favoring smaller class size in the United States. The claim that the greater ethnic homogeneity of those nations explains this difference is not a complete or correct explanation, since in France, for example, the non-native ethnic mix in the Paris area is 23 per cent, with much higher mixed-ethnic percentages in the lower-class suburbs. Yet classes of 35 students produce top results. (For example, France was in the highest group with Singapore and Japan in the recent TIMSS rankings in math.)

The correct explanation for these contrasts with the United States has probably been offered by Harold Stevenson and James Stigler in "The Learning Gap," namely that the disabling diversity of American classrooms is not ethnic or cultural diversity, but rather diversity of academic preparation. This explanation is compelling. Countries that prohibit social promotion and use a core curriculum produce classrooms in which all students in the class are ready to learn. This means that most instruction can be whole-class instruction during which all children participate and learn, and a smaller percentage of teacher time is taken up with individual tutoring. Paradoxically, more individual attention is possible under such circumstances, even though the class size is greater.

In a typical American context, by contrast, where many students are not at grade level and others are beyond grade level, each student receives less interaction with the teacher and less individual attention, even with smaller class size, because the teacher is rarely able to engage the class as a whole. While some students are being tutored, the rest are being left on their own in small-group activities or in isolated seatwork. Under these circumstances, making the class smaller by 20 percent would be immensely expensive, but would, even in theory, produce only marginal benefits. Clearly, the better solution educationally and economically is to insure that all students in a classroom are at grade-level with respect to the subject matter. Adjustments of class size is an expensive band-aid, compared to this more fundamental need. Moreover, money spent on reducing class size might be more productively spent on additional specialist teachers in such subjects as science, music, and fine arts.

An exception to this skeptical conclusion concerns the teaching of reading during first and second grades. Here the diversity of progress by students is inherent, and neither a core curriculum nor a policy of non-social-promotion will overcome that diversity. It has been found that decoding skill is best taught in small subgroups within the class. This argues that expenditure on smaller class size is most clearly justified for the teaching of reading in grades one and two.

III. Subject-Matter Programs for Teachers

As I indicated in my prepared oral testimony, the greatest single imperative for improving teacher quality is to enhance the knowledge base of existing teachers, particularly at the preschool and elementary levels. Past inservice efforts of this kind have proved enormously successful and popular with teachers. Such content-oriented, inservice trainings are not to be confused with the latest process-panaceas purveyed during inservice days by a large and well-paid cadre of itinerant snake-oil salespersons.

Teachers are greatly helped by and they greatly appreciate minicourses in the subject matters they teach, when these are conducted by well-qualified specialists in those subject-matters. Any inservice program that sponsored such content education for teachers would be successful, and would constitute money well spent. Such programs would, of course, be all the more valuable in locations where there is specificity and clarity about the subject matter that the teacher is expected to convey at a particular grade level.

An additional kind of inservice training at the preschool and elementary levels needs to be offered in the subject-matter and methodology of reading instruction. There is now a clear research consensus about the knowledge teachers need to teach all children to read. Not only should such training be offered, but, in due course, all elementary teachers in the earliest grades should pass a qualifying exam on the nature and teaching of reading.

For preschool teachers, there is a special need for inservice courses in which they can unlearn some of the developmental misinformation conveyed to them in early-childhood courses, and publications by the National Association for the Education of Young Children, an organization that persists in its romantic views of early childhood long after the scientific consensus has discredited these views. (See Section VI, below.)

IV. Alternative Certification

Teacher certification should mean more than seat time in education courses which most prospective teachers find to be a waste of time.

An excellent way to improve teacher quality and indirectly the education schools themselves, would be to offer the states a well-conceived model program for alternative certification of elementary-level teachers. Ideally, such a program would have an on-site apprenticeship component, but its distinctive feature would be a teacher examination which tested candidates for the knowledge and competencies that are needed by elementary-level teachers.

The domains of knowledge that the test would cover should be outlined in advance with great specificity, so that prospective teachers and the institutions that train them could know exactly the domains candidates would be tested on. Institutions would arise naturally to provide teachers with the needed knowledge, and education schools themselves would have an incentive to provide such training -- a thing which they do not currently do.

Certification tests for middle school and high school teachers could also be developed. But the chief current need is for a test that would help insure effective, knowledgeable teaching at the elementary level.

A good certification test for elementary teachers would include:

1. Knowledge of the current consensus about early-childhood development, including the fact that abstract and inferential processes start at least by age two, a fact that was not widely understood twenty years ago.

2. Knowledge of research summaries on the relative effectiveness of different modes of instruction.

3. Knowledge of the phoneme system of English and its relation to the written code, and of the research consensus on phonemic awareness.

4. Knowledge of the parts of speech and the principles of syntax, agreement, penmanship, paragraphing, unity, coherence, and emphasis.

5. Knowledge of mathmatics through grade 8.

6. Knowledge of American and world history and geography through grade 8.

7. Knowledge of Science through grade 8.

Anyone who could pass such a test would be well prepared to teach our children. That only small percentage of current teachers could pass such a test is a commentary on the ineffectualness of our education schools. No public interest is served by allowing these institutions a monopoly on the process of teacher certification, and the public interest would be well served by challenging that monopoly through alternative certification.

V. Desirable Constraints on Block Grants

If Congress decides to offer block grants to the states for educational improvement, it is desirable that strings be attached which insure that the money is spent on programs or policies

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that, according to the scientific consensus, actually work. Many programs, (e.g. the whole-language method of teaching reading, the theory of multiple intelligences, performance-based assessment) do not enjoy a consensus among knowledgeable scientists. Rather than offering the states carte blanche, it would be desirable to specify a shopping list of scientifically approved policies from which the states could choose. As I stated in my introductory remarks, it would also be desirable to have these policies controlled outside of education schools and state departments of education, perhaps by specially created boards consisting of mainstream scientists, citizens, and teachers.

VI. Scientific Reliability

In my policy recommendations, I have stressed that the Congress would be wise to decline to fund programs (no matter how appealing they may seem at first glance) about which there is not a genuine consensus in the mainstream scientific community. To support that view, and to give it operational meaning, I am providing here an abridged version of remarks on this topic that I presented to the California State Board of Education.

The enormous problem faced in basing policy on research is that it is almost impossible to make educational policy that is not based on research. Almost every educational practice that has ever been pursued has been supported with data by somebody. I don't know a single failed policy, ranging from the naturalistic teaching of reading, to the open classroom, to the teaching of abstract set-theory in third-grade math that hasn't been research-based. Experts have advocated almost every conceivable practice short of inflicting permanent bodily harm.

So we need to discriminate between reliable and unreliable research. Now it is possible to give some rules of thumb for determining scientific reliability, but there is no formula adequate to all situations. The distinguished sociologist of science, Stephen Cole in his book, Making Science has found a continuous spectrum of reliability in most of the natural and social sciences. At the core of each disipline, there develops a consensus of the learned, and this consensus is highly dependable. It is close enough to being right that you can bet your life and your children's lives on that core. But out at the edge, on the frontier of the discipline, there is a lot of disagreement, and we can't tell for sure which rival theory is right. When lawmakers say that education policy should be based on research, the spirit of the law implies reliable, consensus research. Any other interpretation would mean, and has meant, carrying out unwarranted human experimentation on our children.

If this distinction between core and non-core research is rightly understood, and if its implications are followed, then I think the days of faddism, guruism, partisanship, and unwarranted experimentation may be numbered. I'm not saying that research can decide the aims of education. In a democracy, those are decided by the people. But core science can determine how best to achieve them. Take reading. As a people we have decided that we want all our children to read well. Mainstream research has been saying for some years that a naturalistic approach cannot achieve that goal for all children. The reasons why that core research was not heeded is a subject for intellectual and social history, some of which I traced in my recent book, The Schools We Need.

I was forced to conclude that in the field of psychology, which is the key field for education research, much of what is accepted within the educational community has been required to conform to a so-called "constructivist" ideology that does not represent the consensus in mainstream psychology, and is almost certainly incorrect. One distinguished psychologist who receives grants from the education division of the National Science Foundation (NSF) expressed dismay at the ideological, anti-empirical sermons, as he called them, which he hears at the education division of NSF meetings in psychology.

Insistence upon ideological conformity makes for unreliable science. It hinders the best research from getting disseminated to the education world -- to journalists, policy makers, publishers, teachers, and administrators. As a result, there is an information gap regarding the findings of mainstream psychology as applied to education.

This is a situation that is reminiscent of what happened to biology in the Soviet Union under Lysenkoism, which is a theory that bears similarities to constructivism. In Stalin's day, Lysenko was the powerful bureaucrat-scientist who controlled Soviet biological research, and declined to fund any that didn't conform to the received ideology, which consisted in the view that nurture can transform nature. During the Lysenko period, the dominance of this ideology over disinterested research not only retarded Soviet biology, it caused mass starvation. There are analogies lurking in that history. Over the door of every board of education should be posted the watchword: "Remember Lysenko."

Let me illustrate with one recent incident. The premier journal of educational research is Educational Researcher. Recently, an article was submitted that refuted the claims of situated learning. (Situated learning is the supposed scientific basis of such teaching methods as project learning, integrated learning, and thematic learning). The article also refuted the claims of constructivism, which is a supposedly scientific foundation for such teaching methods as inquiry learning, discovery learning and hands-on learning. After a so-called peer review, Educational Researcher turned down the article, and agreed to print only a section of its critique of situated learning. This decision would have been unremarkable except that the three authors of the article happened to be among the most distinguished cognitive scientists in the world, John Anderson and two other colleagues at Carnegie Mellon, Lynn Reder, and Herb Simon. The latter happens also to be a Nobel prize winner.

No knowledgeable and disinterested person should doubt that Anderson, Reder, and Simon are far more likely than their journal reviewers to be expressing the consensus view at the core of mainstream psychology. It is safe to bet that they are much more likely to be right than the peer reviewers chosen by Educational Researcher. This is a rather clear example of how educational Lysenkoism closes off important and sometimes critical sources of scientific information.

Research can't flourish under such intellectual conformity. It's our collective duty to make sure that journalists, educators, and policy makers have access to the best information from mainstream science. If scientific information had been allowed to flow more freely during the past two decades, the school scene would have a different face than it does now. Math and reading scores would almost certainly be higher.

Over the past decades, educational Lysenkoism has created a conflict between the conclusions promulgated widely in education and those that are accepted in mainstream psychology. Of several such conflicts I shall choose three of the most important -- testing, math, and early education. I intend to be blunt, since forthrightness will be more useful to you than tact. I won't revisit reading research, since the Committee and its advisors have already had the benefit of first-class scientific advice, and has acted accordingly, having made policy that is consistent with what is agreed on by such top researchers as Adams, Foorman, and Stanovich.

In each of the three cases, I shall briefly outline the conflicts between educational Lysenkoism and mainstream science, and then I'll list the names of a few highly-regarded scientists whom you could consult with confidence. In order to make my comments as useful as possible, I will go ahead and make some informed predictions about what those top researchers would tell you, and I will leave a copy of this presentation behind for your use. I got the names by a very simple device. I asked a number of highly reputed scientists which colleagues they considered to be the most authoritative persons in their field, and I found there was wide agreement about those names. As Cole points out, we need to depend ultimately on the consensus views of scientists who are regarded as tops in their fields by other scientists. Should doubt arise as to who those persons are, one should ask for guidance from the National Academy of Sciences. It does not make sense to depend any longer on the guru-principle.

Assessment: As you know, there is a rage in education circles for so-called performance assessments. Despite the tendency of a large body of psychometric research, the current position of the educational community is that performance tests are superior to multiple-choice tests. Educators and state legislatures have hastened to mandate these hugely expensive and unreliable instruments as high-stakes, summative assessments. Before allocating any money to these tests, I would advise you to consult top researchers like Samuel Messick or H. D. Hoover. The answers you get from them will be reliable ones.

Core research says that performance assessments are the least reliable and the most expensive tests that exist. Top scientists in the field would advise you against using end-of-year performance tests, if your aim is to use assessments that are accurate, dependable, and reasonably-priced. Specialists will also tell you that almost all the nasty things said about multiple choice tests are incorrect.

This example illustrates an important principle about reliability. Scientific consensus is not just a matter of counting heads. If you counted all the experts who have gotten on board the performance-test bandwagon, they would outnumber by far the toilers in the psychometric vineyards who publish meticulous articles in the best journals. Counting heads is not the way to determine a scientific consensus. The number of people who believe in flying saucers is greater than than the total number of astrophysicists in the world.

I am making the perhaps disagreeable point that science is an elitist subject, and ought to be so. The consensus that counts is the consensus of the learned. That kind of consensus is determined by disinterested, high-quality peer review in high-quality journals. In the end, of course, only evidence and argument count in science. But there is evidence and evidence, argument and argument. It is an uncomfortable thing to say, but the average quality and reliability of science in the best educational journals is below the quality and reliability of science in the best mainstream journals.

We laypersons cannot judge the quality of research. Figures don't lie, but how do we know which figures are accurate, complete, and rightly interpreted? Our only recourse is to depend on the reputations of the most highly-regarded journals and scientists. Sensible persons would not quickly challenge Samuel Messick any more than they would challenge a Nobelist like Herb Simon. Such highly-regarded sources are not always right, but they are far more likely to be right. The consensus of the learned in first-rate scientific work is one of the closest connections we have with the reality principle.

Let me turn to math education. I read a recent report in "Education Week" which stated that there were two rival math groups in California vying for your approval. On the one side there is what Ed Week called the "reform" group who want to put in place the standards of the National Council of Teachers of Mathematics (NCTM), and on the other, the so-called "anti-reform" group that calls those standards variously "fuzzy math" and "whole math." I thought that the tone of the Ed Week report was typical of current educational reporting in that the NCTM approach, which reflects the dominant view among educators, was labeled "reform" while the dissident group that is trying to effect change was labeled "anti-reform." That kind of ideological bias in reporting is characteristic of the education world, and it well illustrates the need for constant vigilance.

To this Committee I hardly need to restate the details of the math debate. The NCTM group stresses conceptual understanding over mindless drill and practice, while the dissident group stresses the need for drill and practice leading to mastery. To resolve the issue, which researchers should you listen to? Here are three suggestions: John Anderson, David Geary, and Robert Siegler -- three highly distinguished scientists in the psychology of math education. What are they likely to tell you? I believe you will get strong agreement from them on the following points: that varied and repeated practice leading to rapid recall and automaticity is necessary to higher-order problem-solving skills in both mathematics and the sciences.

They would probably explain to you that lack of automaticity places limits on the mind's channel capacity for higher-order problem-solving skills. They would tell you that only intelligently directed and repeated practice, leading to fast, automatic recall of math facts, and facility in computation and algebraic manipulation can one lead to effective real-world problem solving. Anderson, Geary, and Siegler would provide you with reliable facts, figures, and documentation to support their position, and these data would come not just from isolated lab experiments, but also from largescale classroom results. If these top scientists agreed on all these points, that is the consensus you should trust, no matter how many pronouncements to the contrary might be made by national educational bodies.

Speaking of National Educational Bodies brings me to my third and last example of conflict between educational research and mainstream research. To my mind, it is the most fateful conflict of all, since it touches on the general quality of our educational system, and its ability to realize the dream of the common school, that is, the dream of providing genuine equality of educational opportunity to all students regardless of their backgrounds. There is a National Body called the National Association for the Education of Young Children, NAEYC. It withholds its approval from schools and preschools that fail to follow what it calls "Developmentally Appropriate Practice." In its policy statements, it considers it developmentally inappropriate for a whole class to listen to a teacher as a group, or for children to learn academic topics that are deemed too challenging, too advanced, or too ... inappropriate. I have heard NAEYC experts state that the Eiffel Tower is developmentally inappropriate, and also James Monroe, though not James Madison.

Who are top researchers to whom you might turn to ask whether this position is sound? What does consensus mainstream science say about the appropriateness of giving young children challenging academic instruction in preschool through third grade? Some top scientists would be Rochel Gelman, Jean Mandler, Robert Siegler, and Sandra Scarr. There are many other names. Any scientist who has kept up with this field would tell you that there is no foundation in fact or in desirable practice for withholding challenging content from young children.

In my recent book I discussed this discrepancy between the romantic doctrines of the NAEYC and the findings of mainstream research. Since the book appeared, the Carnegie Foundation has issued a report called "Years of Promise," which also shows that the dominant ideas about developmental appropriateness are not science but ideology. The overwhelming evidence against the positions of the NAEYC recently caused that body subtly to revise its guidelines. But the revision is skin deep, and doesn't openly admit that a retreat has occurred, and even that slight shift has not filtered down to experts in early childhood education, who still pronounce on "Developmentally Appropriate Practice."

What advice would the scientists give? They would certainly reject many of the still current positions of the NAEYC which still powerfully dominate the education world. These researchers would encourage you to create challenging, content-rich academic programs for all young children. They would say that programs like Head Start, if fortified with coherent goals and academically rich content, and if followed by coherent goals and academically rich content in kindergarten, first and second grades, that such a policy would enable students to overcome many of our current educational defects and inequities.

I have saved this supremely important topic for my final example of the pervasive conflict between science on the one side and educational ideology on the other. The doctrine of Developmentally Appropriate Practice is drummed into almost all teachers who take early education courses. The intention is to insure caring treatment for young children, yet the ultimate effect of the doctrine is to cause social harm. To withhold demanding content from young children between preschool and third grade has an effect which is quite different from the one intended. It leaves advantaged children (who get knowledge at home) with boring pablum, and it condemns disadvantaged children to a permanent educational handicap that grows worse over time. We know that early education can overcome many of these deficits, and we also know that what is called Developmentally Appropriate Practice can not.

William Julius Wilson makes this point in his recent book on the urban ghetto, When Work Disappears. Disadvantaged children need precisely the sort of learning that is falsely called developmentally inappropriate. Not just Black children are being penalized by withholding the early knowledge needed for educational success. The withholding of an academic and verbal focus in early education generally handicaps all children especially disadvantaged ones. As the late, great James Coleman showed, it is ineffective early schooling coupled with economic class, not with race or ethnicity, that causes the academic achievement-gap.

Yet the phrase "Developmentally Appropriate Practice," has been very effective politically. It has played on our love and solicitude for young children. It is used as a kind of conversation stopper. If one is told that an educational recommendation is "developmentally inappropriate," one is supposed to retreat and remove the offending item from the early curriculum. But this retreat has to stop. The romanticism of NAEYC is wasting minds and perpetuating social inequities.

About any policy that pretends to be researched based, the following questions should be asked: What do the most respected mainstream experts say about these assertions? Is this a practice that has proved itself on a large scale? What is the consensus of top-notch researchers in the field? Those should be the constant questions asked in research-based policy. I hope I have helped clarify what the term "research-based" ought to mean in practice. I earnestly hope you will follow this great principle.

VII. Statement on Federal Grants or Contracts

I am not currently the recipient of any Federal grant or contract, nor have I been a recipient since 1995.

VIII. Biographical Data on E. D. Hirsch, Jr.

1. Prose summary:

E. D. Hirsch, Jr., is the author of numerous books, including the bestsellers Cultural Literacy, and The Dictionary of Cultural Literacy. Other books by E. D. Hirsch on related subjects are: The First Dictionary of Cultural Literacy, and the Core Knowledge Series: What Your First - Sixth Grader Needs to Know, and most recently, The Schools We Need and Why We Don't Have Them. These works have influenced recent educational thought and practice in the United States and other countries. Mr. Hirsch is a graduate of Cornell University, and holds masters and doctoral degrees from Yale University. He began his teaching career at Yale, specializing in Romantic Poetry and Literary Theory, and in 1966 became Professor of English at the University of Virginia, where he served twice as chairman of his department. Currently he is University Professor of Education and Humanities. In 1977, he was elected to the American Academy of Arts and Sciences and in 1997 to the International Academy of Education. He is the recipient of several honorary degrees, has been a Fulbright and a Guggenheim fellow, a fellow of the Center for Advanced Study in the Behavioral Sciences at Stanford University, a Humanities Fellow at Princeton University, a fellow at the Australian National University, and an honoree of the Royal Dutch Academy, and of the Academia Nazionale dei Lincei in Rome. He receieved the biennial QuEST award of the American Federation of Teachers in 1997. He has served on many advisory boards including the National Council on Educational Research. E. D. Hirsch is founder and President of the non-profit Core Knowledge Foundation, an organization that is exercising a growing influence on American educational reform, with Core Knowledge schools in 40 states.

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2. E. D. Hirsch, Jr., Short vita:

Born: 22 March 1928 in Memphis, Tennessee.

Degrees Held: B. A. Cornell University, 1950; M. A. Yale University, 1955; Ph. D. Yale University, 1957; D. Litt. (Hon) Williams College, 1989; D. Litt. (Hon) Rhodes College, 1993, D. Litt. (Hon) Marietta College, 1997.

Summary of Career: Cornell University 1946-50; University of Paris 1948-49 (Cours de la civilisation française); U. S. Navy 1950-52; Yale University 1953-57; University of Bonn 1955-56 (Post graduate study in German philosophy and literature); Instructor in English, Yale University 1957-61; Assistant Professor, Yale, 1961-64; Associate Professor, Yale 1964-66; Professor of English, University of Virginia, 1966 to present; Chairman, Department of English, University of Virginia, 1968-71, 1981-83; Director of Composition, University of Virginia 1971-80; William R. Kenan Professor of English, University of Virginia, 1973 to 1989; Linden Kent Memorial Professor of English, 1989 to present; University Professor of Education and Humanities, 1994 to present.

Professional Positions: Officer on boards of: The Modern Language Association, The American Council of Learned Societies, The National Endowment for the Humanities, Member, Advisory Board: Blake Studies, Critical Inquiry, Genre, Literature and Performance, New Literary History, PTL; Member, New York State Board of Regents Advisory Board for Competency Tests in Writing, 1979-85; Member College Board-ETS Advisory Panel for Advanced Placement Tests in English, 1982-86; Consultant, National Council on Educational Research (Governing Body of the National Institute of Education), 1983. President, Chairman, Core Knowledge Foundation, 1986-present.

Honors: Fulbright pre-doctoral fellow (University of Bonn) 1955-56; Morse Fellow, Yale University, 1962-63; Award for "Best Book of Explication in 1964" for Innocence and Experience: An Introduction to Blake (The Explicator Award); Advisory Committee: Conference on Theory in Humanistic Studies, American Academy of Arts and Sciences, 1968-69; Senior Fellow, National Endowment for the Humanities, 1971-72, 1980-81; Fellow, Center for the Humanities, Wesleyan University, 1973, 1974; Short-Term Fellow of The Council of the Humanities, Princeton University, 1976; Elected to Membership in The American Academy of Arts and Sciences, 1977; Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford, 1980-81; Fellow, Center for the Humanities, Australian National University, Canberra, 1982; Bateson Lecturer Oxford University, 1983; Fellow, Center for Advanced Study of the University of Virginia, 1984-87; Fellow, Netherlands Institute for Advanced Study in the Humanities and Social Sciences, 1984-85 (Deferred); Honorand, the Royal Dutch Academy of Sciences, 1988. American representative: "Critica e Ermeneutica" Accademia Nazionale dei Lincei, Rome, 1996. New York

Times "Notable Books of 1996" for The Schools We Need. Fellow, International Academy of Education, 1997. The Biennial QuEST Award for Outastanding Contributions to Education, American Federation of Teachers, 1997.

Family: Wife, Mary Pope Hirsch; children, Eric (1957), John (1959), Frederick, (1960), Elizabeth (1962).

Books:

Wordsworth and Schelling: A Typological Study of Romanticism (New Haven: Yale University Press, 1960).

Innocence and Experience: An Introduction to Blake (New Haven: Yale University Press, 1964). Second Edition: (Chicago: University of Chicago Press, 1975).

Validity in Interpretation (New Haven: Yale University Press, 1967). German Translation, Prinzipien der Interpretation, translated by Adelaide Anne Späth (Munich: Wilhelm Fink Verlag, 1972); Italian Translation, Teoria dell'interpretazione e critica letteraria, translated with 30-page introduction, by Gaetano Prampolini (Bologna: Società editrice il Mulino, 1973). Hungarian translation, Á Hermeneutika Elmélete, Translated by Fabiny Tibor, et al. (Szged: Kiadja a József Atilla Tudományegyetem Üsszehasonlitó, 1987)

The Aims of Interpretation (Chicago: University of Chicago Press, 1976); Phoenix (paperback) edition (Chicago, University of Chicago Press, 1978). Italian translation, Come si interpreta un testo translated by Lido Valdrè with 20-page introduction by E. Garulli (Rome: Armando Armando editore, 1978). Hungarian translation, Á Hermeneutika Elmélete, Translated by Fabiny Tibor, et al. (Szged: Kiadja a József Atilla Tudományegyetem Üsszehasonlitó, 1987)

The Philosophy of Composition (Chicago: University of Chicago Press, 1977). Phoenix (paperback) edition, (Chicago: University of Chicago Press, 1978).

Cultural Literacy: What Every American Needs to Know (Boston: Houghton-Mifflin, 1987). Paperback, with a new praface and expanded appendix, (New York: Vintage Books, 1988) Translated into Japanese, 1988, into Chinese, 1989.

The Dictionary of Cultural Literacy, with Joseph Kett and James Trefil (Boston: Houghton-Mifflin, 1988). Versions in Swedish, German, and Dutch. Second edition, 1993.

A First Dictionary of Cultural Literacy, with William Rowland and Michael Stanford (Boston: Houghton Mifflin, 1989). Second edition, 1997.

The Schools We Need. And Why We Don't Have Them (New York, Doubleday, 1996). Chapter 5 translated: "La venganza de la realidad: Educacion y las principales corrientes de investigacion pedagogica," Estudios Publicos, No. 66, Auntumn, 1997, pp. 5-72. Chapter 4 translated: "Critica de una cosmovision," Estudios Publicos, No. 68, Primavera, 1997, pp. 21-96.

Co-editor, Books to Build On, (New York, Doubleday, 1996)

The Core Knowledge Series: (New York: Doubleday: 1991-93)

What Your Kindergartner Needs to Know (1996)
What Your First Grader Needs to Know (1991);
What Your Second Grader Needs to Know (1991);
What Your Third Grader Needs to Know (1992);
What Your Fourth Grader Needs to Know (1992);
What Your Fifth Grader Needs to Know (1993);
What Your Sixth Grader Needs to Know (1993).

(Bibiography of 78 scholarly articles omitted for brevity)

APPENDIX F- MR. HANUSHEK

The Evidence on Class Size

Summary of Testimony

Eric A. Hanushek
Professor of Economics and Public Policy
Director, W. Allen Wallis Institute of Political Economy
University of Rochester

TEACHER PREPARATION AND CLASSROOM SIZE REDUCTION

Subcommittee on Early Childhood, Youth, and Families
Committee on Education and the Workforce
U.S. House of Representatives

February 24, 1998
2175 Rayburn House Office Building
Washington, DC

A wave of enthusiasm for reducing class size is sweeping across the country. This move appears to be misguided. I wish to make a single point in my testimony today:

> *Existing evidence indicates that achievement for the typical student will be unaffected by instituting the types of class size reductions that have been recently proposed or undertaken. The most noticeable feature of policies to reduce overall class sizes will be a dramatic increase in the costs of schooling, an increase unaccompanied by achievement gains.*

This conclusion is frequently greeted with surprise, but it should not be. Class size has been steadily reduced for a long period of time with no evidence of overall achievement gains. Moreover, the effects of class size have been studied more intensively than any other aspect of schools, and this extensive research simply does not offer support for the types of policies to reduce class size that have been proposed. Broadly reducing class sizes is extraordinarily expensive and, based on years of research and experience, very ineffective.

I personally believe that there are powerful reasons for us as a Nation to expand and improve investment in human capital. The strength and vitality of our economy depends importantly on having a skilled workforce that can compete in the international economy. Acknowledging the need for investment does not, however, lead to unqualified support for any policies labeled "investment in our youth" or "school improvement." Recent policy discussions have been laced with programs that fundamentally involve haphazard and ineffective spending on schools and that offer little hope for gains in achievement. The current set of class size proposals falls into this category.

People supporting broad class size reductions generally point to a few studies or a few experiences that suggest improved performance with smaller classes and then rely on the "obviousness" of the proposed policies to carry the day. A thorough review of the scientific evidence provides no support for broad programs of class size reduction. This summary provides a summary of evidence that is detailed in my full testimony.

1. We have extensive experience with class size reduction and it has NOT worked.

Between 1950 and 1995, pupil-teacher ratios fell by 35 percent. While we do not have information about student achievement for this entire period, the information that we have from 1970 for the National Assessment of Educational Progress (NAEP) indicates that our 17-year-olds were performing roughly the same in 1996 as in 1970. There are some differences by subject area, but the overall picture is one of stagnant performance.

The aggregate trends cannot be explained away by a worsening of students over time. While some family factors have worsened – increased child poverty and fewer two parent families, others have improved – more educated parents and smaller families.

Nor does appeal to the increases in special education explain the ineffectiveness of past reductions in class size and increases in spending. Even though special education is more expensive than regular education and even though it is an increasingly important issue, it simply is not large enough to rationalize past resource growth.

2. International experience suggests NO relationship between pupil-teacher ratios and student performance.

Dramatic differences in pupil-teacher ratios and in class sizes across countries are unrelated to measures of mathematics and science achievement. While there are many differences across countries that are difficult to adjust for in any analysis, there are also large differences in pupil-teacher ratios. These differences hold the possibility of understanding the effects of class size on performance, but – quite surprisingly – the international differences suggest a slight positive relationship between pupil-teacher ratios and student achievement.

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3. Extensive econometric investigation show NO relationship between class size and student performance.

Extensive statistical investigation of the relationship between class size and student performance shows as many positive as negative estimates. With close to 300 separate estimates of the effect of class size, there is no reason to expect performance improvements from lowering class sizes. Moreover, because of the controversial nature of these conclusions, they have been carefully scrutinized – and the policy conclusions remain unaffected.

These studies are important because they provide detailed views of differences across classrooms – views that separate the influence of schools from that of family, peers, and other factors. As a group, they cover the influence of class size on a variety of student outcomes, on performance at different grades, and on achievement in different kinds of schools and different areas of the country. In sum, they provide broad and solid evidence.

4. Project STAR in Tennessee does NOT support overall reductions in class size except perhaps at kindergarten.

Much of the current enthusiasm for reductions in class size is supported by references to the results of a random-assignment experimental program in the State of Tennessee in the mid1980s. The common reference to this program, Project STAR, is an assertion that the positive results there justify a variety of overall reductions in class size.

The study is conceptually simple, even if some questions about its actual implementation remain. Students in the STAR experiment were randomly assigned to small classes (13-17 students) or large classes (21-25 students with or without aides). They were kept in these small or large classes from kindergarten through third grade, and their achievement was measured at the end of each year.

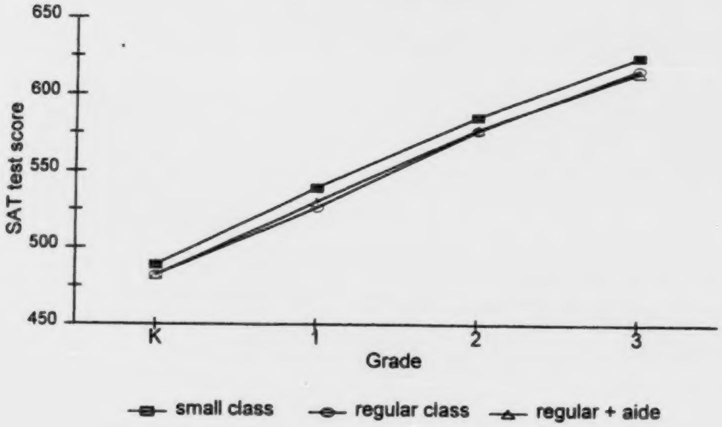
The STAR data are best summarized by Figure 1 (and corresponding figures from my full testimony). At the end of kindergarten, kids in small classes score better than those in large classes. They then maintain this differential for the next three years.

If smaller classes were valuable in each grade, the achievement gap would widen. It does not. In fact, the gap remains essentially unchanged through the sixth grade, even though the experimental students from the small classes return to larger classes for the fourth through sixth grades. The inescapable conclusion is that the smaller classes at best matter in kindergarten. (There are complications with the experiment that lead to uncertainty about even this modest conclusion).

The STAR data suggest that perhaps achievement would improve if kindergarten classes were moved to sizes considerably below today's average. The data do not suggest that improvements will result from class size reductions at later grades. Nor do they suggest that more modest reductions, say to 18 or 20 students per class, will yield achievement gains. The STAR evidence pertains to a one-third reduction in class size, a reduction approximately equal to the overall decline in pupil-teacher ratios between 1950 and today.

Figure 1. Project STAR results

Stanford Achievement Test – math



5. The quality of the teacher is much more important than class size.

Considerable evidence shows that by far the largest differences in the impact of schools on student achievement relate to differences in the quality of teachers. Thus, whether or not large-scale reductions in class sizes help or hurt will depend mostly on whether or not any new teachers are better or worse than the existing teachers.

Unfortunately, the current organization of schools and incentives to hire and retain teachers do little to ensure that the teacher force will improve. Simply grafting on different certification requirements are also unlikely to work. If we are to have a real impact on teaching, we must evaluate actual teaching performance and use such evaluations in school decisions. We cannot rely on requirements for entry, but must switch to using actual performance in the classroom.

6. While silver bullets do not exist, far superior approaches are available.

The Federal government is in a unique position to initiate programs that promise true improvement in our schools. They are not programs that mandate or push local schools to adopt particular approaches – such as lowering overall class sizes or altering the certification of teachers. Instead they are programs that develop information about improved incentives in schools.

The largest impediment to any constructive change in schools is that nobody in today's schools has much of an incentive to improve student performance. Careers simply are not made on the basis of student outcomes. The flow of resources is not related positively to performance – indeed it is more likely to be perversely related to performance. The unfortunate fact is, however, that we have little experience with alternative incentive structures.

The most productive use of Federal funds would be to conduct a series of experiments that could be used to evaluate improvements. Minimally, instead of funding lowered class

The Evidence on Class Size

Testimony before the
Subcommittee on Early Childhood, Youth, and Families
Committee on Education and the Workforce
U.S. House of Representatives

Eric A. Hanushek
Professor of Economics and Public Policy
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February 24, 1998

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The Evidence on Class Size

Eric A. Hanushek[*]

No topic in education has received the public and professional attention that class size has received. Interest in reducing class size is sweeping the country. Calls for reductions in class sizes are a rallying point for parents, teachers, and administrators across the nation, and politicians have rushed to claim credit for introducing policies aimed at reducing class sizes. The pupil-teacher ratio in a district, for example, is frequently used as the fundamental metric for quality, and comparisons across districts become indices of equity. Yet, the surprising fact is that the enormous amount of research devoted to studying class size has failed to make a very convincing case that reducing class size is likely to improve student performance. It will increase costs dramatically, but performance is another matter.

A prime reason for the attention to class size is that it represents such an extremely convenient policy instrument, one amenable to general political action. A legislature or a court, wishing to alter student outcomes, can easily specify changes in class sizes – while other potential policy changes are much more difficult to effect. The rediscovery and publicizing of putative positive findings from experimental evidence (Mosteller 1995) has apparently provided sufficient scientific support so that legislators can confidently pursue politically popular programs either mandating smaller classes or providing substantial fiscal incentives for reductions.

The findings of the general ineffectiveness of reducing class sizes tend to be controversial if for no other reason than they tend to defy common sense, conventional wisdom, and highly publicized accounts of the available scientific evidence. Unfortunately, in order to support calls for class size reductions, there has been a tendency to pick and choose among available studies and evidence. Therefore, it is useful to review the existing evidence and to reconcile the varying conceptions of what might be expected from class size reductions.

The first section begins with what aggregate data indicate about the effectiveness of class size policies. Teachers have been used with increasing intensity throughout the 20th century, making the current push for smaller classes more of an extension of past policies than something new. Over the period that student achievement data are available (the past quarter century) there are no discernible improvements in performance even though there have been large and steady declines in pupil-teacher ratios.

The second section reviews international data. The countries of the world employ surprisingly different ways of running their schooling systems, including very different pupil-

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[*] Professor of Economics and Public Policy and Director, W. Allen Wallis Institute of Political Economy, University of Rochester.

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teacher ratios. When combined with data on student performance, however, the wide discrepancies in pupil-teacher ratios show little relationship to achievement.

The third section summarizes the available extensive econometric evidence about the effectiveness of reducing class sizes. This evidence, which incorporates almost 300 different estimates of the effect of altering class size on achievement, gives no indication that general reductions in class size will yield any average improvement in student achievement. These studies, by separating out the influences of families and other school factors, effectively eliminate the primary interpretative concerns raised with the aggregate data. The lack of evidence about class size effects resulting from viewing achievement differences across individual classrooms is particularly persuasive.

The fourth section turns to the evidence developed in Project STAR, an experiment conducted by the State of Tennessee in the mid1980s. This work involved direct comparisons of achievement by students randomly assigned to small (13-17 students) and large classes (21-25 students) in kindergarten through third grade. While there is some ambiguity, the overall findings suggest that small kindergartens (15 students per teacher) might improve initial learning but that additional resources in later grades did not have a significant influence on the growth in student achievement. This work and related follow-up analyses in Tennessee, summarized in Mosteller (1995), form much of the scientific basis for the current political debates. Unfortunately, most of the policy discussions go considerably beyond the experimental evidence.

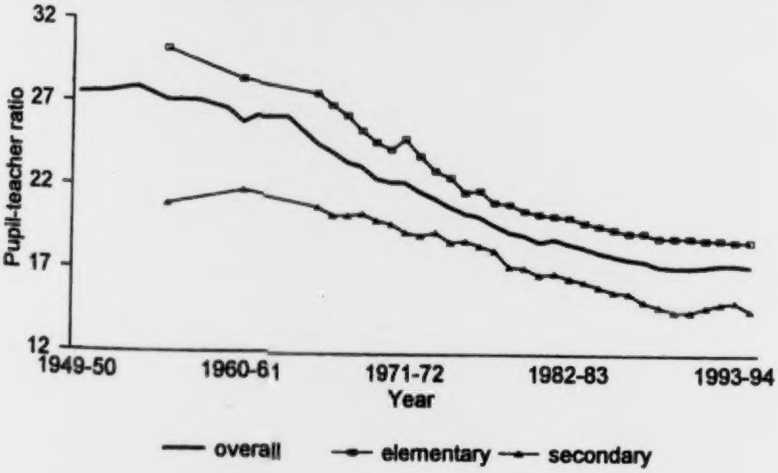
The final section provides possible interpretations for the lack of any results from reducing class size. It then relates the evidence to prospective educational policies.

1. Basic Aggregate Data

It is common to hear it said that "it is not surprising that achievement is what it is, given the large classes that teachers must face." In reality it is just the history of added teachers without any commensurate increases in student achievement that makes a strong *prima facie* case about the ineffectiveness of class size policies.

There have been consistent and dramatic falls in pupil-teacher ratios over most of the 20th century. Figure 1 displays the pattern of pupil-teacher ratios for the period 1950-94. Over this period the overall pupil-teacher ratio fell 35 percent. This decline is the result of steady drops in the pupil-teacher ratio at both the elementary and the secondary school level. The obvious conclusion from this is that, if there is a problem of class size today, there must have been larger problems in the past.

Figure 1. Pupil-Teacher Ratios
Overall and elementary and secondary



percentage rises in recent periods, reaching 85 percent in the period 1970-90.[1] In other words, the reductions in pupil-teacher ratios shown in figure 1 do translate into strong effects on spending.

While instructional staff salaries and other spending moved together over the long period, it is also clear from figure 2 that nonsalary spending has grown more rapidly in the past two decades. Thus, the total growth in spending per pupil is not linked in any simple, mechanical way to pupil-teacher ratios, even though increased intensity of instructional staff obviously is an important element.[2]

The other component of the basic aggregate picture is the pattern of student performance. While we do not have representative student achievement data over the entire century, the National Assessment of Educational Progress (NAEP) does provide data since the 1970s.[3] Figures 3-5 display the patterns of NAEP scores in mathematics, science, and reading. These scores are provided for all 17-year-olds and for separate racial and ethnic groups. Three aspects stand out. First, overall performance is approximately the same in 1970 as it is in the mid1990s. While some differences in patterns exist across the subject areas, the composite picture is one of flat scores over the quarter of a century covered by testing. Second, there has been some convergence

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[1] The change in spending over the period 1970-90 is complicated by fact that the school age population actually declined from the mid-1970s through the mid-1980s. As the population declined, school systems tended to keep the same numbers of teachers, leading to a decline in the pupil-teacher ratio. With the increase in student population, however, there was no tendency for the pupil-teacher ratio to increase. For just the 1980-90 period, increased intensity of teachers accounted for 34 percent of the growth in total instructional staff spending (Hanushek and Rivkin 1997).

[2] While no systematic analysis is available, it seems plausible that the increased intensity of instructional personnel is directly related to parallel increases in noninstructional personnel. At least a portion of the increase in other costs is undoubtedly attributable to various legal changes including mandates for special education (see below) and desegregation efforts.

[3] A longer time series can be constructed from the Scholastic Aptitude Test (SAT), although using those data introduces some added interpretive issues. The SAT actually fell dramatically from the mid-1960s until the end of the 1970s–suggesting that the achievement decline in the NAEP data neglects an earlier period of achievement fall off. The primary interpretive issue, however, revolves around the voluntary nature of the SAT and the increase in the proportion of high school seniors taking the test. The SAT is taken by a selective group of students who wish to enter competitive colleges and universities. As the proportion taking the test rises, so the hypothesis goes, an increasingly lower achieving group will be drawn into the test, leading to lower scores purely because of changes in test taking. While the exact magnitude of any such effects is uncertain, it seems clear that this change in selectivity has caused some of the SAT decline but not all of it (e.g., see Wirtz et al. 1977; Congressional Budget Office, 1986).

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of scores between whites and either blacks or Hispanics. For the period up to 1990, the average black-white gap across subject areas narrowed by 0.4 standard deviations (Hauser and Huang 1996), even though the differences remain substantial. Third, the convergence of scores by race and ethnic groups may have stopped during the 1990s. In fact, since 1990 there has been a noticeable widening of the racial and ethnic achievement gaps not captured in the calculations above.

The challenge is to reconcile the data on pupil-teacher ratios and resources with the data on student outcomes. On the surface, they suggest that increases in the intensity of teachers and the commensurate increases in spending have had minimal effect on student achievement. But a variety of explanations have been suggested to explain how these data could arise for reasons other than the general ineffectiveness of reduced class size.

Fig. 3--Mathematics Achievement (NAEP)
17-year-olds by race/ethnicity:1973-96

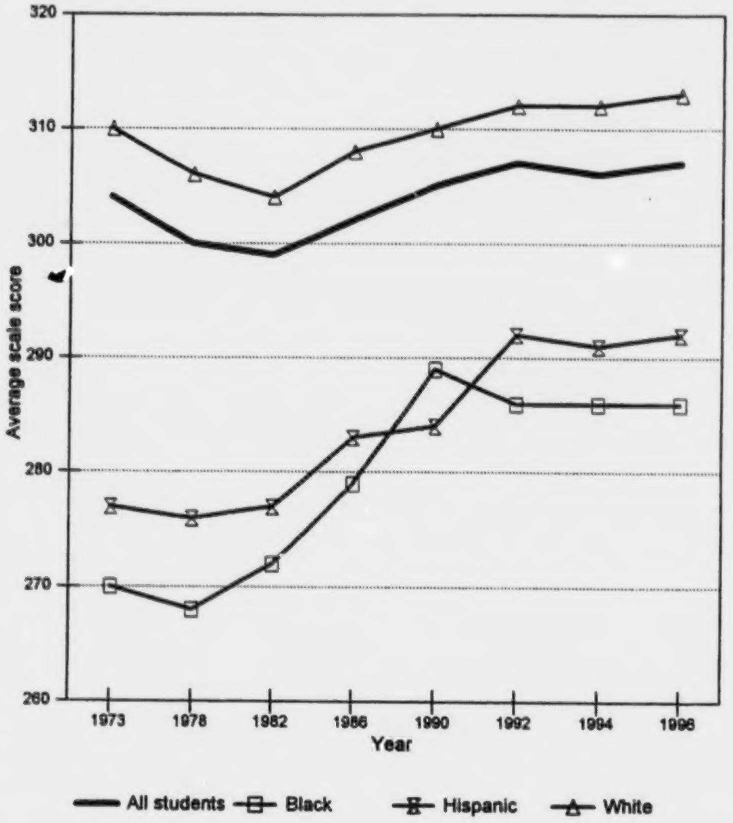

Fig. 4--Science Achievement (NAEP)
17-year-olds by race/ethnicity:1970-96

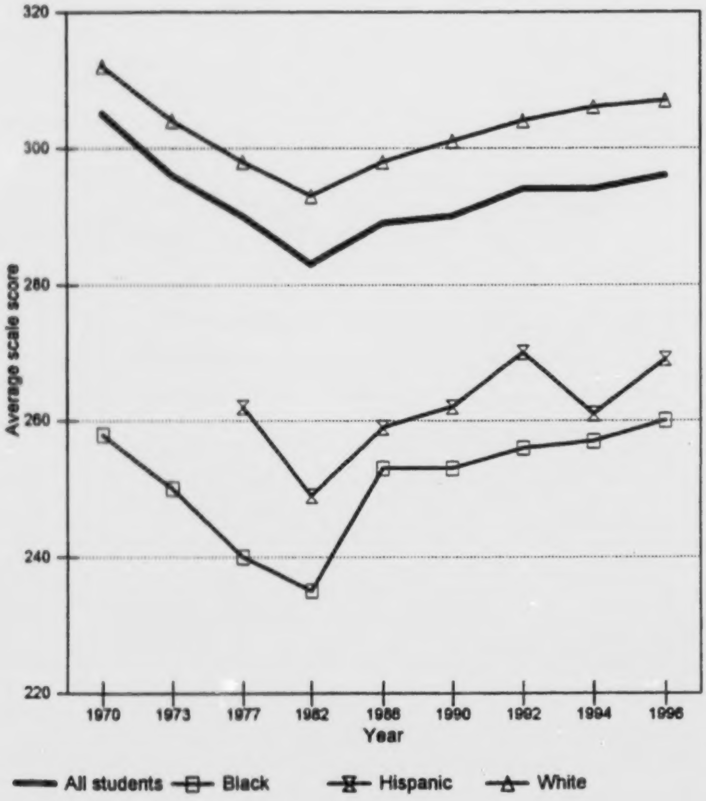

Fig. 5--Reading Achievement (NAEP)
17-year-olds by race/ethnicity:1971-96

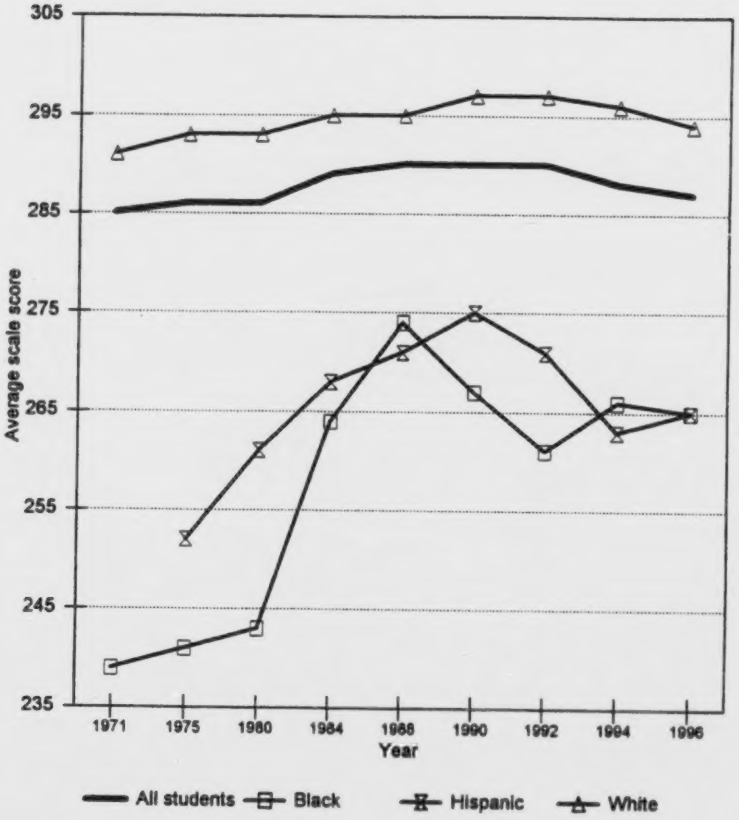

Table 1. Changes in family characteristics, 1960-1990

	1970	1980	1990
% children in poverty	14.9	17.9	19.9
% children under 18 years old living with both parents	85	77	73
% high school graduate or more, population age 25-29	73.8	84.5	85.7
% families with children with 3 or more children	36.3	22.9	20.1

Source: *U.S. Statistical Abstract, 1992*

A. Changes in the student population

One simple explanation for why added resources yield no apparent performance improvement is that students are more poorly prepared or motivated for school, requiring added resources just to stay even. To bolster this view, some point to the increases in children living in single-parent families and the related increases in child poverty rates–both of which are hypothesized to lead to lower student achievement. Table 1 displays these major changes. Between 1970 and 1990, children living in poverty families rose from 14.9 to 19.9 percent, while children living with both parents declined from 85 to 73 percent. But, there have also been other trends that appear to be positive forces on student achievement. As Table 1 also shows, family sizes have fallen, and parental education levels have improved. Over the same period, adults aged 25-29 with a high school or greater level of schooling went from 74 to 86 percent (up from 61 percent in 1960). Moreover, among all families with children, the percentage with three or more children fell from 36 to 20 percent.

It is difficult to know how to net out these opposing trends with any accuracy. Extensive research, beginning with the Coleman Report (Coleman et al. 1966) and continuing through today (Hanushek 1997), has demonstrated that differences in families are very important for student achievement. Most of these studies have not focused their primary attention on families, however, and thus have not delved very far into the measurement and structure of any family influences. Instead, it appears that most have been willing to employ whatever measure of family structure or socio-economic status might be available. Mayer (1997) suggests that the direct causal impact of family income might be fairly small and that the past works have more identified associations than true causal impacts. This analysis, nonetheless, cannot conclusively indicate whether or not there have been trends in the underlying causal factors (that are correlated in cross-sections with income). Hanushek (1992) indicates that family size may have particularly powerful effects on achievement and indeed may be partly responsible for the narrowing in black-white achievement indicated in Figures 2-4, but again it is difficult to compare the influence of the various trends that have been identified.

Grissmer et al. (1994) attempts to sort out the various factors. That analysis uses econometric techniques to estimate how various family factors influence children's achievement. It then applies these cross-sectionally estimated regression coefficients as weights to the trended family background factors identified above. Their overall findings are that black students performed better over time than would be expected from the trends in black family factors. They attribute this better performance to improvements in schools. On the other hand, white students performed worse over time than would expected, leading presumably to the opposite conclusion that schools for the majority of students actually got worse over time.

There are again reasons to be skeptical about these results. First, they do not observe or measure differences in schools but instead simply attribute unexplained residual differences in the predicted and observed trends to school factors. In reality any factor that affects achievement, that is unmeasured, and that has changed over their analysis period would be mixed with any school effects. Second, in estimating the cross-sectional models that provide the weights for the trending family factors, no direct measures of school inputs are included. In the standard analysis of misspecified econometric models, this omission will lead to biased estimates of the influence of family factors if school factors are correlated with the included family factors in the cross-sectional data that underlie their estimation. For example, better educated parents might systematically tend to place their children in better schools. In this simple example, a portion of the effects of schools will be incorrectly attributed to the education of parents.[2] Such biased estimates will lead to inappropriate weights for the trended family inputs and will limit the ability to infer anything about the true changes in student inputs over time. Third, one must believe either that the factors identified are the true causal influences (cf. Mayer 1997) or that they maintain a constant relationship with the true causal influences.

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[2] While it is sometimes possible to ascertain how such statistical misspecification affects the estimated results, the complications here - with multiple factors omitted from the modeling of achievement - make that impossible.

In sum, a variety of changes in family inputs has occurred over time, making it possible that a portion of the increased school resources has gone to offset adverse factors. The evidence is nonetheless quite inconclusive about even the direction of any trend effects, let alone the magnitude. At the same time, the only available quantitative estimates indicate that changing family effects are unable to offset the large observed changes in pupil-teacher ratios and school resources. Indeed, for the nation as a whole, these trends are estimated to have worked in the opposite direction, making the performance of schools appear better than it was. Thus, the most frequently given explanation for the perceived ineffectiveness of historic resource policies does not resolve the puzzle.

B. Special Education and the Changing Structure of Schools

The discussion until now has focused on pupil-teacher ratios, but pupil-teacher ratios are not the same as class sizes. These data on pupil-teacher ratios reflect the total number of teachers and the total number of students at anytime, not the utilization of these. Take a trivial example. Consider a district that only has two teachers, one of whom spends all day in class with the available students and the other of whom is department head and spends all day evaluating the lesson plans of the classroom teacher. In this case, the pupil-teacher ratio is half that of the class size seen by students. More to the point, if teachers are required to meet fewer classes during the day than the number of classes each student takes, the pupil-teacher ratio will again be less than the average class size. Thus, many people correctly note that typical class sizes observed in schools tend to be larger than the measured pupil-teacher ratio.

The only data that are available over time reflect pupil-teacher ratios. This situation is quite natural, because reporting on actual class sizes requires surveying individual districts about their assignment practices. It is not sufficient to have just the readily available data about numbers of teachers and students. Moreover, class sizes will be influenced by the range of choices given to students and the number of separate courses that individual students are taking. The conceptual ideal behind any measurement is itself not well defined because measuring the actual class sizes faced by students requires a variety of decisions about which classes to count and which not to count. For example, should physical education courses be counted? driver's education?

and so forth. This discussion is not meant to imply that we would not like to have data about the varying aspects of schools that influence assignments and class sizes. It merely provides an explanation for why class size data have never been readily available.

Having described the differences, however, it remains to be seen how large the influence of any divergence of class size and pupil-teacher ratios might be on the aggregate trends previously discussed. In order to influence the trends (as opposed to the observed level during any period), it must be the case that the relationship between pupil-teacher ratios and class sizes is changing over time. While this relationship could change for a variety of reasons from altered work days for teachers to expanded curricular offerings, one possible influence – the increased emphasis on special education – has received the most attention.

The growth in students with identified handicaps coupled with legal requirements for providing educational services for them has increased the size of the special education sector. Therefore, the expansion of the more staff-intensive special education sector could reduce the overall pupil-teacher ratio without commensurate decreases in regular class sizes. To the extent that mandated programming for handicapped students is driving the fall in the pupil-teacher ratio, regular class sizes may not be declining and, by extension, one might not expect any improvement in measured student performance.[3] This section, which draws on the Hanushek and Rivkin (1997) analysis, provides a simple analysis of the potential importance of special education in explaining the pupil-teacher ratio fall and commensurate increase in educational expenditure.

Concerns about the education of children with both physical and mental disabilities were translated into federal law with the enactment of the Individuals With Disabilities Education Act (IDEA) in1976.[4] This Act prescribed a series of diagnostics, counseling activities, and services to be provided for handicapped students. To implement this and subsequent laws and regulations, school systems expanded staff and programs, developing entirely new administrative structures in many cases. The general thrust of the educational services has been to provide regular classroom instruction where possible ("mainstreaming") along with specialized instruction to deal with specific needs. The existence of partial categorical funding from outside and of intensive instruction for individual students creates incentives for school systems to expand the population of identified special education students and incentives for parents to seek admission of their children into special education programs (see Hartman[1980], Monk[1990]). The result has been growth of students classified as special education students even as the total student population was falling.

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[3] While little evidence is available, it is frequently asserted that special education students are not generally included in tests and other measures of performance. Therefore, in assessing performance, it would be appropriate to link expenditure on regular-instruction students with their test performance. On the performance side, however, if a larger proportion of students are identified as special education and if these are generally students who would perform poorly on tests, the shift to increased special education over time should lead to general increases in test scores *ceteris paribus*.

[4] The Act, P.L. 94-142, was originally titled the Education for All Handicapped Children Act.

The aggregate changes between 1978 and 1990 in the population identified as disabled is shown in Table 2.[5] Despite the fact that overall public school enrollment declines by over 1.5 million students between 1980 and 1990, the number of students classified as disabled increases from 4.0 million in 1980 to 4.7 million in 1990. Therefore the percentage of students classified as disabled increases from 9.7 to 11.6 percent during this period. Moreover, the number of special education teachers increases much more rapidly than the number of children classified as disabled. Table 2 shows that the number of special education teachers and other instructional staff increases by over 50 percent between 1978 and 1990;[6] special education teachers rise from 195,000 to 308,000 while other special education instructional personnel (including teacher aides) rise from 140,000 to 220,000. Noninstructional special education staff, while rising before 1980, remains roughly constant during the 1980s.

These numbers suggest that the previously noted decline in the pupil-teacher and pupil-staff ratios during the 1980s might have been due to a growth in the number of students receiving special education services and to an increase in the intensity of special education (i.e., a decrease in the effective pupil-teacher ratio for special education). While it is not possible to calculate directly special education intensity (since many of the students classified as disabled attend regular classes for much of the day), the maximum impact of the special education changes on overall pupil-teacher and -staff ratios can be estimated. Specifically, by assuming historic values for special education students, instructional staff, and classroom teachers, we can roughly approximate the impact of the growth in special education on the overall ratios.

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[5] Data on special education comes from annual reports required as part of the Individuals With Disabilities Education Act of 1976. Prior to this Act, no consistent data on handicapped students or their schooling are available.

[6] Precise accounting for special education personnel is frequently difficult, suggesting that these data contain more error than the other aggregate data presented.

Table 2. Special Education Population and School Personnel: 1980-1990

Year	Disabled Children (age 0-21 years) [1,000s]	Percentage of Elementary-Secondary Students	Special Education Personnel [1,000s]		
			Teachers	Other Instructional	Noninstructional
1978	3,777	8.7	195	140	32
1979	3,919	9.2	203	178	37
1980	4,036	9.7	221	159	56
1981	4,178	10.2	233	167	40
1982	4,233	10.6	235	168	46
1983	4,298	10.9	241	168	57
1984	4,341	11.1	248	173	53
1985	4,363	11.1	275	172	54
1986	4,370	11.1	292	183	47
1987	4,422	11.1	296	175	48
1988	4,494	11.2	301	192	49
1989	4,587	11.4	303	208	48
1990	4,688	11.6	308	220	53

Source: U.S. Department of Education, *To Assure the Free Appropriate Public Education of All Children with Disabilities*, Thirteenth Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, 1991, p. 4, for student numbers and various individual annual reports for teachers and other personnel.

Table 3. Estimated Effects of Changes in Special Education on Pupil-Teacher Ratios: 1980-1990

Year	Actual Pupil-Teacher Ratio	Overall pupil-teacher ratio if special education pupil-teacher ratio had remained at 1980 level	Overall pupil-teacher ratio if special education pupil-teacher ratio and proportion of students classified as disabled had remained at 1980 levels
1980	19.1	19.1	19.1
1990	17.2	17.6	17.9

As shown in Table 3, the actual pupil-teacher ratio counting all students and teachers for the years 1980 and 1990 falls from 19.1 to 17.2—a decline of ten percent. The third column estimates what the overall pupil-teacher ratio would have been in 1990 if the observed special education pupil-teacher ratio had remained at its 1980 level instead of falling. The last column shows what the 1990 pupil-teacher ratio would have been if, additionally, the proportion of students classified as disabled would have remained at the 1980 level instead of climbing as it did. The simulations indicate that most of the fall in the pupil-teacher ratio during this period was not caused by the expansion of special education. If the proportion of students classified as disabled and the observed special education pupil-teacher ratio had remained constant, the aggregate pupil-teacher ratio would have fallen at least to 17.9. In other words, by these calculations just over one third of the fall in the pupil-teacher ratio could possibly be attributed to increases in special education.

These calculations are designed to investigate how large the effect of special education could be on pupil-teacher and pupil-staff ratios. The overall conclusion is that special education could have had a significant effect, but that much more has also been going on during recent times. In terms of the basic issue of flat student performance over recent decades, it is also clear that this remains a puzzle with respect to resources and class sizes, because there have been clear increases in resources available for those in regular classrooms.

C. Black-White Differentials

An alternative interpretation of the trends follows the observation that there has been a noticeable narrowing of the racial gap in NAEP performance, particularly during the 1980s. A variety of commentators have taken this as evidence that school resources have an important effect. They point in particular to the increase in federal compensatory programs during the 1970s and 1980s, including Title 1 and Head Start. By this argument, since these programs were aimed at disadvantaged students and since blacks and Hispanics are disproportionately disadvantaged, the narrowing of the differential merely reflects the importance of resources.

One problem with this argument is, however, the magnitude of specific programs for the disadvantaged. At the federal level, where people employing this argument generally point, compensatory education spending amounted to just $7 billion in 1995. These programs go to poor students of all race and ethnic groups, so they do not just help racial and ethnic minorities. Moreover, the amount is relatively small, compared to total spending on elementary and secondary schools of over $300 billion.[7]

Cook and Evans (1996) analyze the black-white achievement differential using the panel of NAEP data. They attempt to decompose the differences in performance into family, school and other factors. Their analysis indicates that school resources and specific school-wide factors cannot account for the narrowing of the gap. In related analysis, Grogger (1996) analyzes the effects of specific school resources on black-white differences in earnings. He also concludes that school resources have not had a significant effect on these differences. Furthermore, there is no indication that pupil-teacher ratios have a significant effect on subsequent earnings by students.

Again, while there is some surface plausibility to the general arguments, detailed analysis does not confirm them.

D. Summary of Aggregate Trends

The available evidence and data suggest some uncertainty about the underlying forces related to families, school organization, class size, and achievement. Allowing for changes in family background and in special education, however, it remains difficult to make a case for reduced class sizes from the aggregate data. A natural experiment in class size reduction has been on-going for a long period of time, and overall achievement data do not suggest that it has been a productive policy to pursue. Nonetheless, the aggregate data are quite limited, restricted to a small number of performance observations over time and providing limited information about other fundamental changes that might affect school success. Therefore, it is useful to turn to other evidence, including more detailed, school-level information.

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[7] The federal government has other relevant programs: Head Start added $3.5 billion, and child nutrition was $7.6 billion. Such expenditures, even if included in the totals for elementary and secondary spending, still yield small relative total spending.

2. International Evidence

Somewhat surprisingly, similar kinds of results are found if one looks across countries at the relationship between pupil-teacher ratios and student performance. While it is clearly difficult to develop standardized data across countries, to control for the many differences in populations and schools, and the like, there remains some appeal in looking across countries. The variations in class sizes and pupil-teacher ratios are larger than found within the U.S., leading to some hope that the effects of alternative intensities of teacher usage can be better understood. Even given the wide differences, there is no evidence that lower pupil-teacher ratios systematically lead to increased performance.

During 1995, the Third International Mathematics and Science Study (TIMSS) was conducted. A series of mathematics and science tests were given to a group of voluntarily participating nations. As a simple exercise, the 8th grade math and science scores can be correlated with the primary school pupil-teacher ratio in each country.[8] For the 17 nations with consistent test and pupil-teacher ratio data, there is a *positive* relationship between pupil-teacher ratio and test scores, and it is statistically significant at the 10 percent level for both tests. The statistical significance does go away but the positive result remains when Korea, the sampled country with the largest pupil-teacher ratio, is left out of the analysis. Nonetheless, international evidence points to a surprising result that performance is better when there is less intensive use of teachers, even though there is not much confidence that such differences are more than statistical artifacts.

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[8] Test scores are reported in Beaton *et al.* (1996a, 1996b). Primary pupil-teacher ratios for public and private schools are found in OECD (1996).

A more systematic attempt to investigate the relationship between student performance and pupil-teacher ratios uses the six prior international tests in math or science given between 1960 and 1990 (Hanushek and Kim, 1996). This analysis, which utilizes 70 country-test specific observations of test performance, finds a positive but statistically insignificant effect of pupil-teacher ratios on performance after allowing for differences in parental schooling. Again, while there are very large differences in pupil-teacher ratios, they do not show up as significantly influencing student performance.[9]

Finally, while uniform data are not available on class size differences, some intensive investigations have shown that class size differences vary more internationally than pupil-teacher ratios. Specifically, Japan and the United States have quite similar pupil-teacher ratios, but, because of choices in how to organize schools and to use teachers, Japanese class sizes are much larger than U.S. class sizes (Stevenson and Stigler, 1992). Japanese student performance is on average much better than U.S. student performance.

Of course, there are many differences in the schooling and societies of the sampled nations, so it would be inappropriate to make too much of these results. They do, however, underscore further that the normal presumptions about the achievement effects of pupil-teacher ratios and class size are not found in the evidence.

3. Econometric Evidence

The most extensive information about the effects of class size comes from attempts to estimate input-output, or production functions, for schools. The investigation of the effects of school resources began in earnest with the publication of the "Coleman Report" (Coleman et al., 1966). This Congressionally mandated study by the U.S. Office of Education startled many by suggesting that schools did not exert a very powerful influence on student achievement. Subsequent attention was directed both at understanding the analysis of the Coleman Report[10] and at providing additional evidence about the effects of resources.

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[9] At the same time, differences in test performance are extraordinarily important in determining differences in national growth rates (Hanushek and Kim, 1996).

[10] These analyses suggested serious flaws in the statistical methodology and interpretation of the Coleman Report, but most of those discussions is not relevant for this discussion. See Bowles and Levin (1968), Cain and Watts (1970), Hanushek and Kain(1972).

Over the past thirty years, a steady stream of analyses has built up a consistent picture of the educational process. This summary concentrates on a set of published results available through 1994,[11] as described in greater detail in Hanushek (1997). The basic studies include all available that meet minimal criteria for analytical design and reporting of results.[12]

The summary relies on all of the separate estimates of the effects of resources on student performance. For tabulation purposes, a "study" is a separate estimate of an educational production function found in the literature. Individual published analyses typically contain more than one set of estimates, distinguished by different measures of student performance, by different grade levels, and frequently by entirely different sampling designs. If, however, a publication includes estimates of alternative specifications employing the same sample and performance measures, only one of the alternative estimates is included.[13] Thus, the 90 individual publications that form the basis for this analysis contain 377 separate production function estimates. While a large number of studies were produced as a more or less immediate reaction to the Coleman Report, half of the available studies have been published since 1985.

These econometric estimates relate class size or teacher intensity to measures of student performance, while also allowing for the influence of family and other inputs into education. The precise sampling, specification of the relationships, measurement of student performance, and estimation techniques differ across studies but here I concentrate on just the summary of any relationship across studies. To do this, studies

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[11] The tabulations do include results in Hanushek, Rivkin, and Taylor (1996), since this updating was conducted as part of that research. Some analyses have subsequently been published but including their results will not affect the overall conclusions here (see Hanushek, 1997).

[12] Specifically, the studies must be published in a book or journal (to ensure a minimal quality standard); must include some measure of family background in addition to at least one measure of resources devoted to schools; and must provide information about statistical reliability of the estimate of how resources affect student performance.

[13] Some judgment is required in selecting from among the alternative specifications. As a general rule, the tabulated results reflect the estimates that are emphasized by the authors of the underlying papers. In some cases, this rule did not lead to a clear choice, at which time the tabulation emphasized statistically significant results among the alternatives preferred by the original author. An alternative approach is followed by Betts (1996). He aggregates all of the separate estimates of a common parameter that are presented in each individual paper.

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Table 4. **Percentage Distribution of Estimated Influence of Teacher-pupil on Student Performance, By Level of Schooling**

School level	number of estimates	Statistically significant		Statistically insignificant		
		Positive	Negative	Positive	Negative	Unknown sign
All schools	277	15%	13%	27%	25%	20%
Elementary schools	136	13	20	25	20	23
Secondary schools	141	17	7	28	31	17

are aggregated according to the estimated sign and statistical significance of the relationship.[14]

Table 4 summarizes the available results for estimates of the effects of teacher-pupil ratios on student outcomes. Of the total of 377 available econometric studies of the determinants of student performance, 277 consider teacher-pupil ratios. (Estimates of the effect of class size or pupil-teacher ratios are reversed in sign so that conventional wisdom would call for a positive effect in all cases). The top row of the table shows that just 15 percent of all studies find a positive and statistically significant relationship between teacher intensity and student performance–the expected result if class size systematically matters. At the same time, 13 percent of all studies have negative and statistically significant relationships with student performance. Ignoring the statistical significance, or the confidence that we have that there is any true relationship, we find that the estimates are almost equally divided between those suggesting that small classes are better and those suggesting that they are worse.[15] This distribution of results is what one would expect if there was no systematic relationship between class size and student performance. Fully 85 percent of the studies suggest either that fewer teachers per student are better (i.e., yield negative estimates) or that there is less confidence than usually required that there is any relationship at all (i.e., are statistically insignificant).

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[14] More details about the methodology and the available studies can be found in Hanushek (1979, 1997). Some controversy also exists about the best way to summarize the results of different studies, but these issues have little bearing on the discussions here; see Greenwald, Hedges, and Laine (1996) and Hanushek (1996a, 1997). Other discussions and controversies about the estimation strategies can be found in Card and Krueger (1996), Heckman, Layne-Farrar, and Todd (1996), and Hanushek (1996b). The issues raised in those latter discussions, while relevant to some of the considerations here, are very technical and, in my opinion, do not affect the policy conclusions here.

The table also shows the results divided by level of schooling. Some people have suggested that the effect of class size may differ by point in the schooling process (including the interpretation of the STAR study discussed below). The initial summary looks across all grades and could mask differences between earlier and later schooling. To consider this possibility, the overall estimates of the effects of teacher-pupil ratios are divided into elementary and secondary schools. As Table 4 shows, there is little difference between the estimated effects in elementary and in secondary schools, but, if anything, there is less support for increasing teacher-pupil ratios at the elementary level. For elementary schools, more estimated effects (both for all studies and for ones with statistically significant estimates) are negative as opposed to positive; i.e., indicate that smaller classes are worse. There are, nonetheless, too few studies to permit looking at individual grades as opposed to all elementary grades combined.

Returning to the prior discussion, these estimates do contain a mixture of studies that explicitly measure class size (or the teacher-pupil ratio for specific classes) and those that contain aggregate measures of teacher-pupil ratios for a school, district, or state. In fact, studies that investigate performance within individual classrooms invariably measure class size, while those at higher levels of aggregation most often measure average teacher-pupil ratios. In particular, studies that are highly aggregated, such as those investigating performance across entire districts or entire states, are almost always forced to consider just the overall teacher-pupil ratio. Table 5 displays the results of estimates according to the level of aggregation of the teacher-pupil measure. As the table shows, analyses conducted at the state or district level are more likely to indicate that teacher-pupil ratios have a positive and statistically significant relationship with student performance. Nonetheless, while this pattern coincides with the less precise measure of class size at the class room level, the pattern is more likely to come from other fundamental analytical problems than from the pure measurement issues. As described in Hanushek, Rivkin, and Taylor (1996), the more aggregated

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[15] Twenty percent of the studies do not report the sign of any estimated relationship. Instead, they simply note that the estimates were statistically insignificant.

Table 5. **Percentage Distribution of Estimated Effect of Teacher-Pupil Ratio on Student Performance by Level of Aggregation of the Resource measures**

Aggregation	number of estimates	Statistically significant		Statistically insignificant		
		Positive	Negative	Positive	Negative	Unknown sign
Total	277	15%	13%	27%	25%	20%
Classroom	77	12	8	18	26	36
School	128	10	17	26	28	19
District	56	21	16	39	20	4
County	5	0	0	40	40	20
State	11	64	0	27	9	0

analyses are subject to a series of specification problems (independent of the ones considered here) that are exacerbated by the aggregation of the analysis. In particular, the more aggregated analyses leave out all consideration of state-by-state differences in school policies, and this appears to bias the results toward finding stronger effects of teacher-pupil ratios and school resources in general. At a minimum, we can conclude that the insignificance of the results appears real and is not just an artifact of measuring teacher-pupil ratios instead of actual class size. The best studies with the most precise measurement of class size and school resources arrive at the same general conclusions, indicating that the results are not easily explained away by poor research methods.

One type of statistical investigation—those employing a value-added specification—is generally regarded as being conceptually superior and likely to provide the most reliable estimates of education production functions. These studies relate an individual's current performance to the student's performance at some prior time and to the school and family inputs during this intervening time. The superiority of this approach comes from the use of prior achievement to ameliorate any problems arising from missing data about past school and family factors and from differences in innate abilities of students (Hanushek 1979).

Table 6. Percentage Distribution of Other Estimated Influences of Teacher-Pupil ratio on Student Performance, Based on Value-added Models of Individual Student Performance

Resources	number of estimates	Statistically significant		Statistically insignificant		
		Positive	Negative	Positive	Negative	Unknown sign
All value-added studies	78	12%	8%	21%	26%	35%
Studies within a single state	23	4	13	30	39	13

Table 6 provides a summary of value-added results, both for all 78 separate estimates of class-size effects and for the 23 estimates that come from samples in a single state. Clearly, the number of these estimates is very much reduced from the overall set that is available, and thus any conclusions are subject to more uncertainty just due to limited number of underlying investigations. On the other hand, because of the superiority of these analyses, each study deserves more weight than one of the general studies reviewed previously. The restriction to samples within single states corrects for differences in state school policies to avoid the biases previously discussed. There is simply little reason from the results in table 6 to believe that smaller classes systematically lead to improvements in student achievement. Of the best available studies (single-state, value-added studies of individual classroom achievement), only one out of 23 (4 percent) shows smaller classes to have a statistically significant positive effect on student performance.

As pointed out by Krueger (1997), if the effects of class size on performance are small, a number of the reported econometric studies may simply not have adequate data to distinguish between "small effect" and "no effect"–leading to the pattern of statistically insignificant results reported. Preliminary analysis of achievement data for several entire cohorts of students in the State of Texas provides partial support for this hypothesis (Rivkin, Hanushek, and Kain, 1998). With over 300,000 observations of gains in student performance across the schools of Texas, statistically significant positive results are found for smaller classes in fourth and fifth grade mathematics and reading performance.[16] Even with such large samples, however, class size is a statistically insignificant determinant of sixth grade performance in either subject. More importantly, the estimated magnitudes are very small. A class size *reduction of 10 students*, which approximately cuts average class size in half and represents a 2½ standard deviation movement, is never estimated to yield more than 0.12 standard deviations improvement in student achievement for the results that are statistically significant. When results are separated for students eligible for free or reduced lunches, the performance of disadvantaged students is found to be more sensitive to class size: A 10 student reduction in class size reductions could yield as much as 0.19 standard deviations (in fifth grade math performance). Estimated class size effects for students ineligible for free or reduced lunch are, however, less than half the size of those for disadvantaged students and are more frequently insignificant.

A final set of questions about the econometric studies of teacher-pupil ratios involves the underlying mechanism for establishing small and large classes. If, for example, a school district used a subjective method of assigning "weaker" students to small classes and "stronger" students to large classes, the econometric methods might not provide an accurate assessment of the direct, causal influence of class size. One example of a correction for this is Hoxby (1996), which employs other information about the source of class size decisions in order to correct for any such problems. When this is done, class size still has no consistent effect on student outcomes.[17]

The econometric evidence is clear. There is little reason to believe that smaller class sizes systematically yield higher student achievement. While some studies point in that direction, an almost equal number point in the opposite direction. Moreover, restricting attention to the best of these studies, including those with the most accurate measurement of individual class sizes, merely strengthens the overall conclusion.

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[16] The analysis of student performance employs a complicated statistical analysis (regression of differences in achievement growth) in order to eliminate both unmeasured individual ability differences and the potential effects of student selection into specific schools. The small results reported here are also consistent across alternative estimation strategies based on simple models of achievement growth.

[17] Note, moreover, that this problem arises only when decisions are made on the basis of unmeasured student characteristics. If, for example, students are assigned to specific classes on the basis of their early test scores and if these test scores are controlled for in the econometric analysis as in the value-added estimation, these problems do not arise. The statistical analysis in Rivkin, Hanushek, and Kain (1998) provides an alternative approach to the selection problems.

One other attempt to correct for possible influences of school decision making does find significant class size effects (Angrist and Lavy, 1996). This study considers special features of Israeli law which permit alternative statistical approaches to identifying small class effects. Its applicability to U.S. schools is unclear.

4. The STAR Experiment

In the mid1980s, because of ambiguity about the effects of class size on student performance, the State of Tennessee launched a random-assignment experiment in reducing class sizes (Word et al., 1990; Finn et al, 1990; Finn and Achilles, 1990). The design was heavily influenced by an early summary of research by Glass and Smith (1979). That latter study combined the evidence from different experimental studies and suggested that student achievement was roughly constant across class sizes until the class size got down to approximately 15-to-1. After 15-to-1, reductions in class size appeared to yield significant gains in student performance. Based on this and a desire to find ways of improving student performance, the Tennessee legislature mandated an experimental study of the effects of class size on student achievement. The result, Project STAR, is a large and complicated experiment. Beginning in 1985, a group of kindergarten through third graders in Tennessee was randomly assigned to either regular classes (22-24 students) or small classes (14-16 students). The regular classes were broken into two groups, one with teacher aides and one without aides. To be eligible for participating in the experiment, a school also had to be large enough so as to ensure that there was at least one small and one large class of each type. Students placed in small classes remained in these classes from kindergarten through third grade and were followed over time as they progressed through the grades. Over 7,000 students in 79 different schools participated in the program.

A variety of natural and design factors, discussed below, introduce uncertainty into the analysis and interpretation of the results. Nonetheless, without going into any controversies, it is clear that many popular interpretations of the STAR results are not supported by the basic data.

The basic STAR data indicate that there are at best very specific and limited achievement effects that might follow from class size reductions. Figures 6 and 7 present a graphical display of the basic achievement results of the STAR program. These figures plot average reading and math scores through the grades of the program for students randomly assigned to the three different classroom situations (Word *et al.*, 1990).[18] Three facts are immediately obvious from these charts.

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[18] A series of different tests were given. The figures report on the results from the nationally-normed Stanford Achievement Test. Using data from the alternative criterion-referenced tests would

- First, for both reading and mathematics, students in small classes have significantly greater average achievement at the end of kindergarten.[19]

- Second, on average students in regular classes and in regular classes with aides perform virtually the same throughout the experiment.

- Third, the kindergarten gap between small and regular classrooms is maintained at essentially the same level through the first, second, and third grades.

The original analyses of the experiment separately reported the differences in performance between the small and regular classes at each grade, giving the impression that the added classroom resources in each grade from kindergarten through third led to significant gains in achievement in each grade. This interpretation was reinforced by the widely cited review of the study's findings by Harvard statistician Frederick Mosteller (Mosteller 1995). For example, "After four years, it was clear that smaller classes did produce substantial improvement in early learning and cognitive studies ..." (Mosteller, 1995, p. 113). In reality, the differences were clear in kindergarten and simply reappeared in subsequent years.

The key to interpretation for policy purposes revolves around expectations about student performance over time. Perhaps the most standard interpretation from learning theory begins with the view that education is a cumulative process, building on past achievement. From this view, if students learn certain skills in the first grade, they tend to carry over to later grades, albeit possibly with some depreciation. According to this view, the basic evidence of the STAR study suggests that smaller classes may be important at kindergarten but have no average effect subsequently. Specifically, since the growth in achievement across experimental and control students is the same from first through third grade, the added resources of the smaller classes appear to add nothing to student performance. Early differences simply remain the same over time. If resources had a continuing impact, we should observe a widening of achievement as more and more resources are applied.

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not change the patterns or conclusions.

[19] A series of questions about the effects of initial randomization, of sample attrition, and of student mobility do remain. Unfortunately, the data from the STAR experiment have not been made generally available to researchers, so the analysis and interpretation of the results must rely on just the published reports of the original researchers.

Figure 6. Project STAR results

Stanford Achievement Test – reading

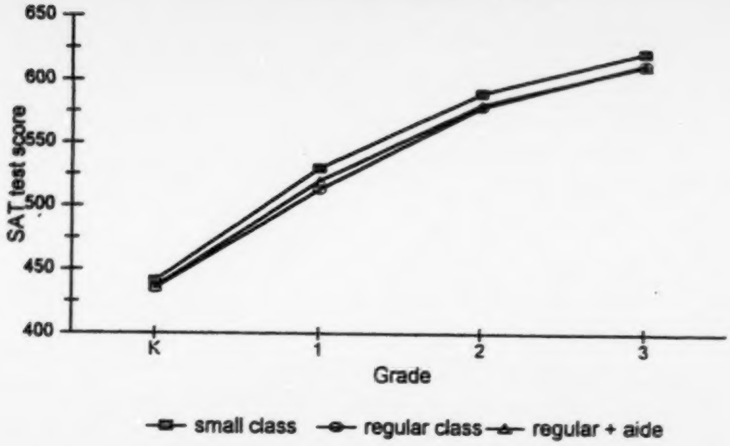
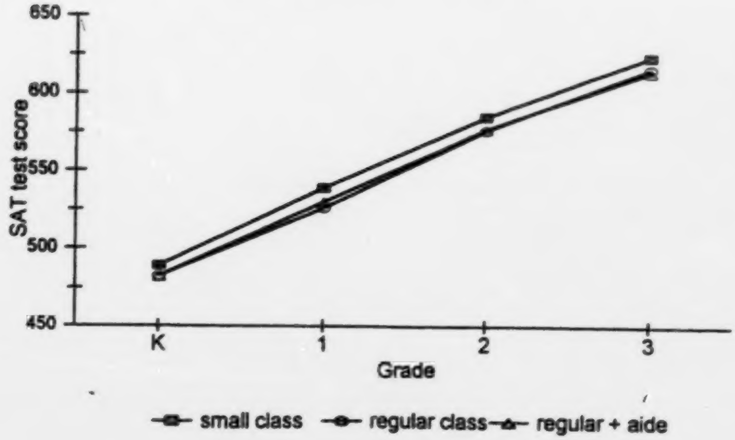


Figure 7. Project STAR results

Stanford Achievement Test – math



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Some have argued that the observed pattern could be consistent with small classes making a difference in all grades if students are expected to fall back to a common mean performance each year. This is equivalent to a view that educational performance is not cumulative. Under this set of expectations, maintaining the difference in performance at the end of kindergarten requires continuing infusion of additional resources–and lowered class size might be effective if it stemmed the 'inevitable' reversion of achievement to lower levels if the resources were removed. Such interpretations are most common when discussing the education of disadvantaged students, since that view is one common (but largely untested) way of explaining achievement reversions from initial gains in Head Start and other early childhood programs for disadvantaged children. (At the same time, it is important to remember that Project STAR was not a program for disadvantaged students but instead for the broad spectrum of Tennessee children. Therefore, interpretation of the results must be consistent with underlying notions of the learning process for all children, not just the disadvantaged).

The way to identify the effects of class size in the presence of these alternative interpretations would be to assign some of the experimental children to larger classes after they had been in small classes in the earliest grades. Unfortunately, this was not done within the experiment. However, follow-ups of the STAR students after they had returned to regular class settings provide important information. The Lasting Benefits Study, which has traced students after the end of the STAR experiment, showed that students from the small K-3 classes maintained most of the prior differences through the sixth grade (Nye et al., 1993). Comparisons of small versus regular classrooms yielded effect sizes on the norm-referenced third grade tests of 0.24 and 0.21 for reading and math, respectively (Word *et al.*, 1990).[20] In the sixth grade, three years after the end of any differential resources for the two groups, the effect sizes for comparisons of students previously in small versus regular classrooms were 0.21 and 0.16 for reading and math, respectively (Nye *et al.*, 1993). In other words, the differentials in performance found at kindergarten remain essentially unchanged by third grade after class size reductions of one-third were continuously applied (see figures 6 and 7) and remain largely unchanged by sixth grade after class size returned to its prior levels for another three years. This latter finding leads to rejection of the fall-back model and indicates that class size reductions after kindergarten have little potential effect on achievement.

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[20] Effect sizes indicate the differences in average performance for the two groups measured in units of standard deviations of the test; see Mosteller, 1995.

A third interpretation–which helps to reconcile the basic data–is that small classes, particularly if they occur early in the schooling process, have a one-time effect on student performance that is not linked to the acquisition of cognitive skills *per se*. This one time effect could reflect early training in the "activity of school." Students in small classes, by this view, learn the norms, behavior, and learning patterns that are useful in subsequent years, so that they are able to continue achieving at a higher level.[21] In fact, this last interpretation is the one most consistent with the STAR data (ignoring the other possibilities of flaws in the underlying experimental design and data collection). It provides a parsimonious explanation of why there is a one-time but lasting effect of class size reductions in kindergarten. But, this interpretation also has powerful implications for any policy discussions.

The most expansive conclusion that can be reached from Project STAR and the Lasting Benefits Study is that they might support an expectation of positive achievement effects from moving toward small kindergartens, and maybe small first grades. None of the STAR data support a wholesale reduction of class sizes across grades in schools. The achievement results also come from large reductions (one-third of the existing regular class sizes) that take the small classes to quite low levels compared to most existing situations (15 students per class). It does not provide evidence about what might happen with smaller changes that take class sizes down from the current levels to levels above the Tennessee experiment, say, to 18-20 students. (Remember that the original motivation for Project STAR involved research results suggesting no effects for class sizes above 15-to-1).

This policy interpretation is quite different from that commonly attributed to the STAR analysis, which many cite when they wish to justify any sort of reduction in class size at any grade in school.

Project STAR and related programs do support one aspect of the econometric results from Texas that were mentioned previously: Disadvantaged students appear more sensitive to class size variations than the majority of students (Mosteller, 1995). Again, however, disadvantaged students on average are not currently in larger classes than more advantaged students, and the effects appear small relative to costs of programs and alternative policy approaches.

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[21] In fact, Krueger (1997) employs the STAR data for a re-analysis and finds that there is a large "first-year" effect but little continuing effect from reduced class size, supporting this last view. Krueger's results are slightly different from the simple graphs, because he incorporates the fact that some students begin with small classes in the first grade and not just in kindergarten. If students were not in small kindergartens, he suggests that they can achieve gains from small classes in the first grade, i.e., their first year with small classes.

As mentioned, some aspects of the experimental design introduce additional uncertainty into the analysis. The most important concerns are: 1) that not all students started the experiment at the same time, because kindergarten was not mandatory or universal in Tennessee; 2) sizable attrition occurred over the course of the experiment because of mobility and other factors, and this attrition was likely not random; 3) parents, teachers, and schools knew they were part of an experiment and, because of pressures from parents, part of the experiment was compromised by re-assignments of students;[22] 4) no achievement tests were given before kindergarten, making it difficult to analyze whether elements of the random-assignment process contributed to any subsequently observed achievement differences;[23] 5) approximately 6 percent of the students were transferred across treatment groups at the end of the first year of the experiment;[24] and, 6) there was some drift from the target class sizes of 15 and 22 so that there is actually a distribution of realized class size outcomes over time in both treatment groups. Each of these issues has been raised by the initial researchers (e.g., Finn and Achilles, 1990) and by later interpreters of the results (e.g., Mosteller (1995) and Krueger (1997)), but the experimental data do not provide information that permits fully ascertaining the effects of such possible problems.

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[22] After the first year, students in the regular and the regular with aide classes were randomly re-assigned. Preliminary analyses from kindergarten had indicated that these two treatments did not result in significantly different performance, but the re-assignment made analysis of aide effects difficult. Small class assignments were not altered.

Virtually no attention has been given to how teachers responded to the experiment. Teachers knew that they were participating in an experiment to ascertain the effectiveness of reduced class size. Each teacher clearly knew whether they were part of the small or regular class portion of the experiment. And, teachers in general would prefer smaller to larger classes. Whether these factors influenced work effort or behavior is not known.

[23] Considerably controversy exists about how early in schooling reliable achievement testing is possible, but few people suggest that pre-kindergarten testing is either reliable or useful. Thus, while the lack of pretesting in the experimental assignment is understandable, it still introduces some uncertainty into the analysis. Krueger (1997) does demonstrate that there does appear to be random assignment based on key student characteristics such as race or eligibility for free or reduced lunch, providing a *prima facie* case that kindergarten differences are not just the result of any simple biases in treatment assignment.

[24] The transfers were "intended to separate incompatible children and 'to achieve sexual and racial balance'"(Mosteller, 1995, p. 124). Such transfers potentially bias simple comparisons of small and regular classrooms, because treatments are no longer independent of student characteristics.

Quite incredibly, the data from this experiment have not been generally available to researchers who were not involved in the original design and analysis. While many appear to have thought, for example, that the widely cited article by Mosteller (1995) involved new data analysis, in fact it simply compiled the results of the previously published original analyses of the STAR data. Indeed, Mosteller concludes:

> Because a controlled education experiment (as distinct from a sample survey) of this quality, magnitude, and duration is a rarity, it is important that both educators and policymakers have access to its statistical information and understand its implications. Thought should be given by both public and private organizations to making sure that this information is preserved and well documented and that access to it is encouraged. (Mosteller 1995, p. 126)

A decade after the experiment nothing has been done to permit general access to these data, even though truly enormous decisions are being made based on the limited set of available analyses of the experimental data.[25]

It is particularly important to note that Project STAR has never been replicated. The ambiguities arising from the contaminating conditions cited above clearly suggest that further experimentation would be useful in reducing uncertainties arising from the original study. Indeed, practical problems of experimental implementation suggest that no single experiment is likely to be entirely free of ambiguities. Nonetheless, the power of random-assignment experimentation–a routine contributor, for example, to advances in medical knowledge–should not be ignored. One of the strongest messages of Mosteller (1995) is the power of random-assignment experiments to circumvent some of the difficulties of relying on statistical analyses of observations from natural outcomes of the schooling process. (On this point, see also Hanushek with others, 1994).

An explanation that has been cited for the lack of any replication or extension of Project STAR's experimental approach is that experiments are expensive. Project STAR involved appropriations of about $3 million per year (Word *et al.*, 1990). Yet the proper frame of reference is the cost of a full scale program, such as the 1996

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[25] The data have been archived at the Center of Excellence for Research in Basic Skills of Tennessee State University. The data have not been made available to outside researchers despite many requests to gain access to them. Krueger (1997) employs the basic STAR data, although his copy of the data was supplied personally by one of the initial principal investigators and not by the Center.

California class size initiative for K-3 that involves a $1 billion annual expenditure. Proposed national programs go far beyond this expenditure. The potential costs of implementing an ineffective policy on that scale simply dwarf the costs of designing, implementing, and evaluating a series of extensive random-assignment studies designed to investigate alternative policy proposals (Hanushek with others, 1994). Further, when class size reductions are implemented for an entire state, they defy subsequent analysis of their effectiveness. In other words, we will be unlikely ever to obtain reliable evaluations of whether or not the $1 billion annual expenditure in California is achieving any positive educational results. Of course, if the class size reductions are viewed more as policies with political rather than educational objectives, it is perhaps the case that policy makers do not want to know whether there are performance improvements.

5. Interpretation and Conclusions

The extensive investigation of the effects of class size on student performance has produced a very consistent picture. There appears to be little systematic gain from general reductions in class size. This story comes through at the aggregate level, where pupil-teacher ratios have fallen dramatically over the past three decades and where student performance has remained virtually unchanged. It also comes through from international data, where extraordinarily large differences in class sizes are found without commensurate differences in student performance. But, since the aggregate analyses could be misleading for a variety of analytical reasons, more weight should be put on school level analyses and on experimental data. From production function estimates, there is little reason to believe that overall reductions in class size will yield much in the way of positive achievement gains. With several hundred separate estimates of the effects of reduced class size, positive and negative effects almost evenly balance each other, underscoring the ineffectiveness of overall class size policies such as those being currently advocated. Finally, the one major random-assignment experiment – Tennessee's Project STAR study – provides no support for widespread class size reductions, although it holds out hope for gains from reduced-size kindergartens.

None of this says that smaller classes never matter. Indeed, the micro-evidence, which shows instances where differences in teacher-pupil ratios appear important, suggests just the opposite. My own interpretation is there are likely to be situations – defined in terms of specific teachers, specific groups of students, and specific subject matters – where small classes could be very beneficial for student achievement. At the same time, there are many other situations where reduced class size has no important effect on achievement, even if it always has very significant impacts on school costs. Thus, across-the-board policies of class size reductions, such as those enacted in 1996 for elementary education through grade three across the State of California, are unlikely to have a beneficial effect on overall student achievement.[26]

The complexity of the situation is that we do not know how to describe *a priori* situations where reduced class size will be beneficial. Thus, it is not possible to legislate just the good outcomes from the state capital or to institute just the good outcomes from the courtroom. Policies developed there can only expect average gains, which appear to be very small.

The California policy, which many other states appear to be on the verge of emulating, illustrates another aspect of the relationship between research evidence and policy making. The California program was designed to move classes down to around that of the regular sized classes in the Tennessee experiment. No evidence from STAR relates to the likely effects of such a policy change (as opposed to moving classes down to the level of 15-to-1). Moreover, the original Glass and Smith (1979) analysis itself casts serious doubts on the potential for any improvement in student performance from this policy.

Much of the case for reduced class size rests on common sense arguments. With fewer students, teachers can devote more attention to each child and can tailor the material to the individual child's needs. But, consider, for example, a movement from class sizes of 26 to class sizes of 23. This represents an increase in teacher costs alone of over ten percent. It is relevant to ask whether teachers would in fact notice such a change and alter their approach. The observational information from teacher and classroom process effects of the one-third reductions in Project STAR suggested no noticeable changes (Finn and Achilles, 1990).

The policy issue is not defined exclusively by whether we should expect positive effects from reducing class sizes. Even if we were confident of positive effects, the case for general policies to reduce class size would not yet be made. Class size reduction is one of the most expensive propositions that can be considered. The policy experiment of Project STAR involved increasing the number of classroom teachers by one-third, a policy with massive expenditure implications if implemented on a wide-scale basis. In recognition of fiscal realities, the expense of such policies puts natural limits on what is feasible, leading many reductions to be in the end rather marginal. Marginal changes, however, are even less likely to lead to underlying changes in the behavior of teachers.

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[26] In the short run, it is quite conceivable that the California program could have negative effects. By being introduced unexpectedly and with little lead time, many districts found themselves without existing classrooms or teachers to permit desired reductions in class sizes–leading to transitional difficulties that could have negative consequences for a number of years.

But could reducing classes hurt? Many argue (correctly) that improving the quality of U.S. schools should be a very high priority for policy at the local, state and national levels. Moreover, this argument is (correctly) supplemented by noting the special concerns about equity and equality of opportunity that follow from significant disparities in outcomes across economic and racial groups. Faced with these real concerns and given the strong advocacy of reducing class sizes by teachers and parents, politicians appear frequently to find supporting proposals to reduce class size simply irresistible. After all, some students will undoubtedly benefit from smaller classes even if all do not. The primary argument against this is that bad policy drives out good policy. There are clear limits to the amount of funds and attention available for education. Squandering the current public and political attention on policies that reinforce existing inefficiencies and that promise little hope of success is likely to have long term consequences, albeit consequences that will not be apparent until some time in the future.

It appears that the ultimate effect of any large-scale program to reduce class size will depend much more importantly on the quality of new teachers hired than on the effects of class size reductions *per se*. Variations in teacher quality have been shown to be extraordinarily important for student achievement, and the econometric studies providing such results indicate that these variations completely dominate any effects of altered class size.[27] Thus, if new hires resulting from a class size reduction policy are above the average quality of existing teachers, average student performance is likely to increase. If below, average student performance is likely to fall with class size reductions. From past experience, there is little reason to believe that teacher quality of new teachers will be significantly different from that of existing teachers unless incentives facing schools also change.[28]

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[27] Rivkin, Hanushek, and Kain (1998) demonstrate that class size variation can explain just a very small portion of the variation in student achievement and that variations in teacher quality are much more significant. Hanushek (1992) estimates variations in total teacher differences (measured and unmeasured) and shows that the differences in student achievement with a good versus a bad teacher can be more than 1½ grade levels of achievement within a single school year. See other references in Hanushek (1997).

The uncertainty about the specific circumstances that lead to desirable student performance through reduced classes and the ineffectiveness of current selection, hiring, and retention of teachers are exactly what lie behind calls for improved incentives in schools (Hanushek with others, 1994). The current school structure provides few incentives for improving student performance. In essence, nobody's job or economic rewards depend on what happens with student performance. In such a situation, nobody really expends much effort to uncover situations where small classes will succeed. Instead, decisions about class size become ones discussed in terms of "fairness" and not in terms of student performance or cost control. After all, would it be fair to allow one group of students or teachers to have small classes while others must have large classes? Such logic, which totally ignores consideration of effectiveness, is almost certainly a contributor to the growth in expenses and resources within the currently ineffective operations of schools.

One appeal of simple class size policies for many current actors in the system is that they maintain the existing structure of schools while simply adding more resources. Yet the existing organization and incentives in schools have proved very ineffective at translating resources into student performance. Moreover, much of the past expenditure growth comes from pursuing exactly the policies being proposed today. If such policies failed in the past, why should we believe that the next round will be any different?

Most discussions of reducing class size begin with an assertion that student performance will increase if only class sizes can be reduced, a proposition shown to be generally erroneous. They then move quickly to policies of large-scale reductions in pupil-teacher ratios where there is no direct linkage between specific class size decisions and student performance. The situation and the educational outcomes might change dramatically if everybody had stronger incentives to use budgets wisely and to improve student performance.

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[28] Under some circumstances, such as the large unexpected hiring from the California class size reductions in 1996, one might expect the average quality to fall. In general, however, there is no shortage of trained teachers, and the real issue is simply the selection from the substantial pool of trained teachers not currently employed in the schools. See Ballou and Podgursky (1997) and Murnane *et al.* (1991).

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Born in Lakewood, Ohio, in 1943, he was a Distinguished Graduate of the United States Air Force Academy where he received his Bachelor of Science degree in 1965. In 1968, he completed his Ph.D. in economics at the Massachusetts Institute of Technology. He served in the U.S. Air Force from 1965-1974.

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Committee on Education and the Workforce

Witness Disclosure Requirement – "Truth in Testimony"
Required by House Rule XI, Clause 2(g)

Your Name: ERIC A. HANUSHEK		
1. Are you testifying on behalf of a Federal, State, or Local Governmental entity?	Yes	No X
2. Are you testifying on behalf of an entity other than a Government entity?	Yes	No X
3. Please list any federal grants or contracts (including subgrants or subcontracts) which you have received since October 1, 1994: Graduate Research Traineeship Grant--National Science Foundation; Subcontract to review papers on cost of education indices--National Center for Education Statistics, Dept. of Education.		
4. Other than yourself, please list what entity or entities you are representing:		
5. If your answer to question number 2 is yes, please list any offices or elected positions held or briefly describe your representational capacity with the entities disclosed in question number 4:		
6. If your answer to question number 2 is yes, do any of the entities disclosed in question number 4 have parent organizations, subsidiaries, or partnerships to the entities for whom you are not representing?	Yes	No
7. If the answer to question number 2 is yes, please list any federal grants or contracts (including subgrants or subcontracts) which were received by the entities listed under question 4 since October 1, 1994, including the source and amount of each grant or contract:		

Signature: Eric Hanushek Date: 2/18/98

Please attach this sheet to your written testimony.

APPENDIX G- MR. INGERSOLL

STATEMENT OF

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Assistant Professor
Department of Sociology
University of Georgia
Athens, GA 30602

Subcommittee on Early Childhood, Youth and Families
Committee on Education and the Workforce
United States House of Representatives

Teacher Preparation and Classroom Size Reduction
Tuesday, February 24, 1998
Rayburn House Office Building
Washington, DC

Mr. Chairman and members of the Committee, I would like to thank you for the opportunity to appear before you today to discuss current issues surrounding the training and quality of our nation's elementary and secondary teaching workforce. For the past several years I have been undertaking research on problems with the qualifications of our high school teachers. I would like to talk about what I have found in this research.

Background

Few issues in our elementary and secondary schools are subject to more debate and discussion than the quality of teachers. Over the past decade, literally dozens of studies and national commissions have bemoaned the failure to insure that our nation's classrooms are all staffed with qualified teachers. As a result, in recent years reformers in many states have pushed, often successfully, for tougher teacher-licensing standards and more rigorous academic-coursework requirements for teaching candidates. Moreover, a whole host of initiatives and programs have sprung up which are designed to recruit new candidates into teaching. Among these are: programs designed to entice professionals into a mid-career change to teaching; alternative certification programs, whereby college graduates can postpone formal education training, obtain an emergency or provisional teaching certificate, and begin teaching immediately; Peace-Corps-like programs which are designed to lure the "best and brightest" into understaffed schools.

However, although insuring that our nation's classrooms are all staffed with qualified teachers is among the most important issues in our schools, it is also among the least understood. The array of recent efforts to recruit new teachers and to upgrade the training and education of new teachers are often very worthwhile. But, they alone will not solve the problems of underqualified teachers and poor quality teaching in this country because they do not address some of their key causes.

One of the least recognized of these causes is the phenomenon of out-of-field teaching - teachers teaching subjects which do not match their training or education. Recruiting new teachers and requiring more rigorous education and training will not solve the problem if large numbers of such teachers continue to be assigned to teach subjects other than those for which they were trained.

One of the reasons for the lack of awareness of this problem has been an absence of accurate statistics on the subject - a situation now with the completion of a major new survey of the nation's elementary and secondary teachers by the National Center for Education Statistics (NCES) of the U.S. Department of Education - the Schools and Staffing Survey. Over the past several years, I have undertaken a research project, partly funded by NCES, that used this survey to determine how much out-of-field teaching goes on in this country and why.

My interest in this project originally stemmed from my previous experiences as a high school teacher, first in western Canada and then later in Pennsylvania and Delaware near where I had grown up. The job of teaching, I found to my surprise, was very different in Canada than in the U.S. One of the major differences, I quickly discovered, was out-of-field teaching. In the Canadian schools in which I taught, misassignment was frowned upon and a rare occurrence. In contrast, out-of-field teaching was neither frowned upon nor uncommon in the high schools, both public and private, in which I taught in the U.S. My field was social studies, but hardly a semester went by in which I was not assigned a couple of classes in other fields, such as math,

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special education, or English. Teaching a subject which one does not know is challenging, to say the least. It is also, I came to believe, both very detrimental to the educational process and, largely, avoidable.

My experiences left me with a number of questions: Were the schools in which I taught unusual in this regard? Or, was out-of-field teaching also a common practice in other schools across the country, and if so, why? Later, after having left secondary teaching, and having completed a Ph.D., I got the opportunity to investigate these questions in a large-scale research project.

The findings of this research have been shocking, and as a result, have been featured in a number of major education policy reports and commissions, and widely reported and commented upon in the national media. They have, moreover, been replicated; other researchers have conducted statistical analyses of the various independent cycles of NCES' Schools and Staffing Survey and have found similar results. Unfortunately, however, there remains a great deal of misunderstanding of this problem.

Today I will very briefly summarize what I have found in my research. I would also be happy to provide, at a later date, copies of the publications and papers in which I have reported this research in detail.[1]

How Widespread is Out-of-Field Teaching?

There is a much controversy over how much and what kinds of training and education teachers ought to have to be considered "qualified." In my research I decided to skirt this debate by focusing on the most compelling case. I began by looking at whether teachers have a both teaching certificate (a license) and also an undergraduate, or even a graduate degree, in an academic discipline, but my primary focus quickly became discovering how many high school teachers do not have even minimal academic credentials - neither a major nor a minor - in their teaching fields. My assumption was that adequately qualified teachers, especially at the secondary school level and especially in the core academic fields, ought to have, as a minimum prerequisite, at least a college minor in the subjects they teach. In short, I assumed that few parents would expect their teenagers to be taught, for example, 11th grade trigonometry by a teacher who did not have a minor in math, no matter how bright the teacher. I found, however, that is precisely the case.

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[1] Detailed reports of my research on out-of-field teaching can be found in two NCES research reports, *Teacher Supply, Teacher Quality and Teacher Turnover* (1995), *Out-of-Field Teaching and Educational Equality* (1996), and also a forthcoming research paper, *The Problem of Out-of-Field Teaching in American High Schools*.

I found, for example, that almost one third of all high school math teachers do not have either a major or a minor in math, or related disciplines such as physics, engineering or math education (see Figure 1). Just over one fifth of all high school English teachers have neither a major or minor in English, or in related disciplines, such as literature, communications, speech, journalism, English education or reading education. It is worse within broad fields, such as science and social studies, which include many disciplines. Teachers in these departments are routinely asked to teach any of a wide array of subjects out of their discipline, but within the larger field. Partly for this reason, over half of all high school physical science teachers (chemistry, physics, earth science, or space science) do not have either a major or a minor in any of these physical sciences. Moreover, over half of all history teachers have neither a major nor a minor in history.

The actual numbers of students affected are not trivial. For example, in each of the fields of English, math and history, every year several million high school students are taught by teachers without a major or minor in the field.

Out-of-field teaching also greatly varies across schools, teachers, and classrooms. For instance, recently hired teachers are more often assigned to teach subjects which do not match their training, than are more experienced teachers. Low-income public schools have higher levels of out-of-field teaching than do schools in more affluent communities. Particularly notable, however, is the effect of school size; small schools have high levels of out-of-field teaching. There are also differences within schools. Lower-track classes are more often taught by teachers without a major or minor in the field than are higher-track classes. Junior-high level classes are also more likely to be taught by out-of-field teachers than are senior high classes. Out-of-field teaching is, however, not simply a problem of the poor or the urban or the disadvantaged; it is found in high levels in both rural and urban schools and in both affluent and low-income schools in this country.

No doubt some of these out-of-field teachers may actually be qualified, despite not having a minor or major in the subject. Some may be qualified by virtue of knowledge gained through previous jobs, through life experiences or through informal training. Others may have completed substantial college coursework in a field, but not have gotten a major or minor. In Georgia, for instance, because school accreditation regulations require teachers to have at least 20 hours of college credit (about 4 courses) in a field to teach it, many of those in the state assigned to teach out of their fields probably do have some background.

My premise, however, was that even a moderate number of teachers lacking the minimal prerequisite of a college minor signals the existence of serious problems in our schools. And, this is clearly the case. Out-of-field teaching is not an aberration; it takes place in well over half of all secondary schools in the U.S. in any given year. Indeed, if I were to change the definition of a "qualified" teacher, for instance, to include only those who held *both* a college major and a teaching certificate in the field, the amount of out-of-field teaching substantially increases. Moreover, I found that out-of-field teaching is a chronic condition; levels of out-of-field teaching have changed little from the late 1980s to the mid 1990s.

The negative implications of such high levels of out-of-field teaching are obvious. Is it any surprise, for example, that our students' science achievement is so low given, that *even* at the 12th grade level, 41 percent of public secondary school students in physical science classes are taught by teachers with neither a major nor a minor in either chemistry, physics or earth science?

The crucial question, and the source of great misunderstanding, is why so many teachers are teaching subjects for which they have little background.

Sources of Out-of-field Teaching

Many people assume that out-of-field teaching is a problem of poorly trained or educated teachers and can be remedied by more rigorous teacher education and training standards. This is only partly correct.

The data show that almost all teachers in the U.S. have completed a college education and almost half have graduate degrees. Moreover 94 percent of public school teachers hold regular state-approved teaching certificates (see Figure 2). The source of out-of-field teaching lies not in the amount of education teachers have, but in the lack of fit between teachers' fields of training and their teaching assignments. Many teachers are assigned by their principals to teach classes which do not match their training or education.

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The implications of this distinction for reform are important. There is no question that the qualifications of the teaching force can benefit from upgraded education and training requirements. This is the virtue of reforms designed to enhance the training of teachers, and the ongoing efforts by many states to toughen entry criteria, increase academic coursework requirements, enact more stringent certification standards, and increase the use of testing for teachers. However, while very worthwhile, none of these kinds of reforms will eliminate out-of-field teaching assignments and, hence, alone will not solve the problem of underqualified teaching in our nation's classrooms. In short, mandating more rigorous coursework and certification requirements will help little if large numbers of such teachers continue to be assigned to teach subjects other than those for which they were educated or certified.

A second explanation for out-of-field teaching blames teacher unions. In this view, self-serving work rules promulgated by teacher unions are the main reason that classrooms are often staffed with underqualified teachers. The use and abuse of such rules, according to this view, is especially prevalent in times of teacher oversupply, when school officials, due to fiscal cutbacks or declining enrollments, are faced with the necessity of cutting or shifting staff. In such situations, "last-hired, first-fired" seniority rules require that more experienced teachers must be given priority, regardless of competence. As a result, so his argument goes, veteran teachers are often given out-of-field assignments, junior staff are transferred or laid off and students suffer accordingly.

The data do not provide support for this explanation of out-of-field teaching. Indeed, the data suggest the opposite is the case. Beginning teachers are more prone than experienced teachers to be misassigned, and both public and private schools with unions usually have less, not more, out-of-field teaching.

Union work rules certainly have an impact on the management and administration of schools and, depending upon one's viewpoint, this impact may be positive or negative, but eliminating teacher unions will not eliminate out-of-field teaching.

The most popular explanation of the problem of out-of-field teaching blames teacher shortages. This view holds that shortfalls in the number of available teachers primarily due to increasing student enrollments and a "graying" teaching workforce have forced many school systems to resort to lowering standards to fill teaching openings, the net effect of which is out-of-field teaching. That includes hiring underqualified candidates, shifting existing staff members trained in one field to teach in another, or instituting alternative recruitment programs whereby college graduates can begin teaching immediately without obtaining a license.

This last view is also only partly correct. The data show that, consistent with the shortage predictions, demand for teachers has, in fact, increased since the mid 1980s. Student enrollments have steadily increased, teacher retirements have steadily increased, an overwhelming majority of schools have had job openings for teachers, and the size of the teaching workforce has steadily increased. And, substantial number of schools do report some degree of difficulty filling their teaching vacancies with qualified candidates. Finally, and most importantly, when faced with such difficulties, administrators tell us they most commonly do three things: hire less qualified teachers; assign teachers trained in another field or grade level to teach in the understaffed area; and make extensive use of substitute teachers. Each of these particular coping strategies results in out-of-field teaching.

But, it is a mistake to assume, as it has been commonly done, that hiring difficulties and out-of-field teaching are due to teacher shortages, in the conventional sense of too few candidates available and willing to enter teaching. While it is true that student enrollments are increasing, the demand for new teachers is not primarily due to these increases. The demand for new teachers is primarily due to teachers moving from or leaving their jobs and while it is true that teacher retirements are increasing, teacher turnover appears to have little to do with a graying workforce. In contrast, the high rates of teacher turnover that plague schools, teachers report, are far more often a result of two related causes: teachers seeking to better their careers and/or teachers dissatisfied with teaching as a career (see Figure 3).

The implications of this for reform are important. Initiatives and programs, designed to recruit new candidates into teaching, while worthwhile in many ways, alone, will not solve the problem of underqualified teachers in classrooms if they do not also address the factor which, the data suggest, does lead to severe staffing inadequacies in schools: too little teacher retention. In short, recruiting more teachers will help little if large numbers of such teachers then leave.

The data show, understandably enough, that low salaries, rampant student discipline problems, and little faculty input into school decisionmaking all contribute to high rates of teacher turnover. Improving these things would decrease turnover, which would quickly eliminate the so-called shortages. It would also remove much of the need for out-of-field assignments in the first place.

An Alternative View

This points to, what I have come to believe, is a far more fundamental problem facing the teaching occupation and the real cause of the problem of out-of-field teaching.

Unlike in Canada and also in many European and Asian nations, in this country elementary and secondary school teaching is largely treated as low-status work and teachers as semi-skilled workers. Except in an emergency, few would require cardiologists to deliver babies, real estate lawyers to defend criminal cases, chemical engineers to design bridges or sociology professors to teach English. The commonly held assumption is that such traditional professions require a great deal of skill and training, that is, expertise, and, hence, specialization is assumed necessary. In contrast, the commonly held assumption is that elementary and secondary school teaching require far less skill, training and expertise than these traditional professions.

It is perhaps true that teaching may require less expertise than some other kinds of work but, those who have spent time in classrooms know that high quality teaching requires a great deal of expertise and skill and that teachers are not like interchangeable blocks that can be placed in any empty slot regardless of their type of training. Indeed the best contemporary research on the process of teaching has begun to insightfully illuminate the complex combination of art, craft and science that good teaching entails.

It is the low status and standing of teaching, exemplified by a lack of respect for the complexity and importance of the job of teaching, that has resulted, I believe, in what the data tell us - that teaching is plagued by problems of both recruitment and retention and that out-of-field teaching is not simply an emergency condition, but a common practice in the majority of secondary schools in this country.

The implications of this view for reform are clear. The way to make sure there are qualified teachers in every classroom is to upgrade the job of teaching. Well paid, well respected occupations with good working conditions rarely have difficulties with recruitment or retention and, if so, do not resort to lowering standards as a coping mechanism. If teaching was treated as a highly valued profession, one requiring a great deal of knowledge and skill to do well, there would be no problem attracting and retaining more than enough excellent teachers, and there would be little problem insuring that all classrooms were staffed with qualified teachers.

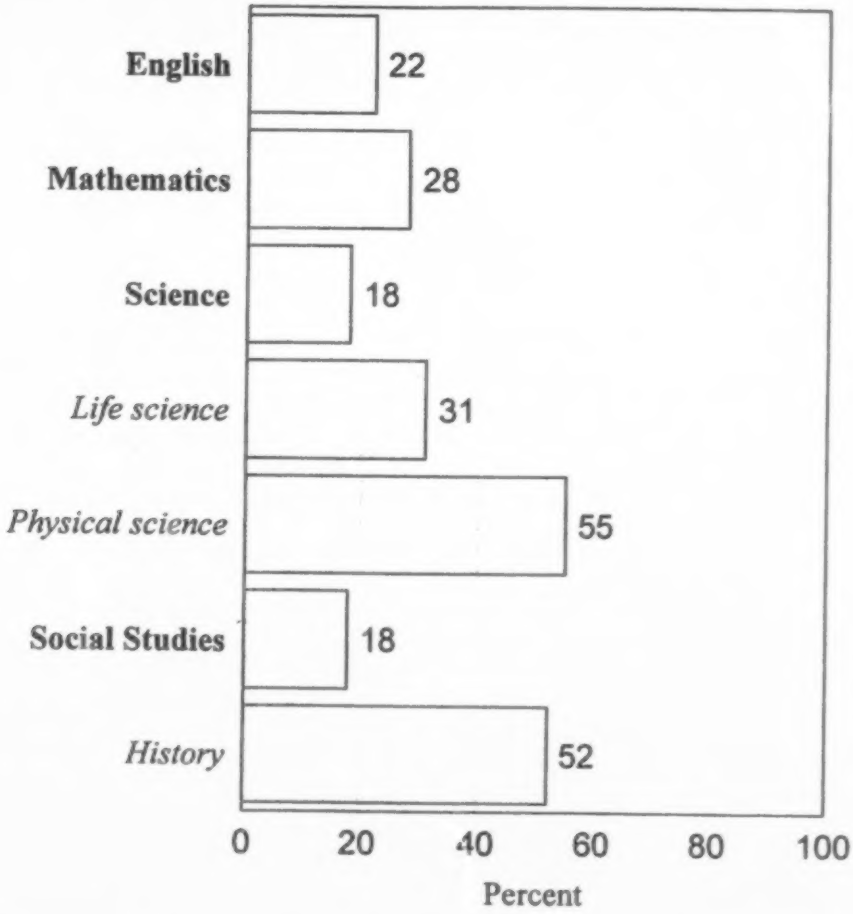
Hence. we need to look beyond simply recruiting and training new teachers; attention must also be paid to supporting and keeping our existing teachers. Improving the management of schools is, of course, to a large extent, out of the jurisdiction of Federal legislation. But there are things that could be done.

For example, simply providing information at the local level on the extent of underqualified and out-of-field teaching could be very helpful. For this reason, I am pleased to notice a Parental Rights Title included in a couple of the currently pending legislative proposals concerned with teacher preparation and recruitment (e.g. Representative Miller's H.R. 2228). Such a measure would go a long way towards bringing to light what has long been a "dirty little secret" - out-of-field teaching assignments.

Federal funds could also be directed towards upgrading the training and skills of existing staff. Despite the Education Department's Eisenhower program, the data show that there is currently very little such support. Moreover, funding could be directed towards alternative schools for problem students; the data reveal that student misbehavior is a large factor in the high teacher turnover that plagues schools.

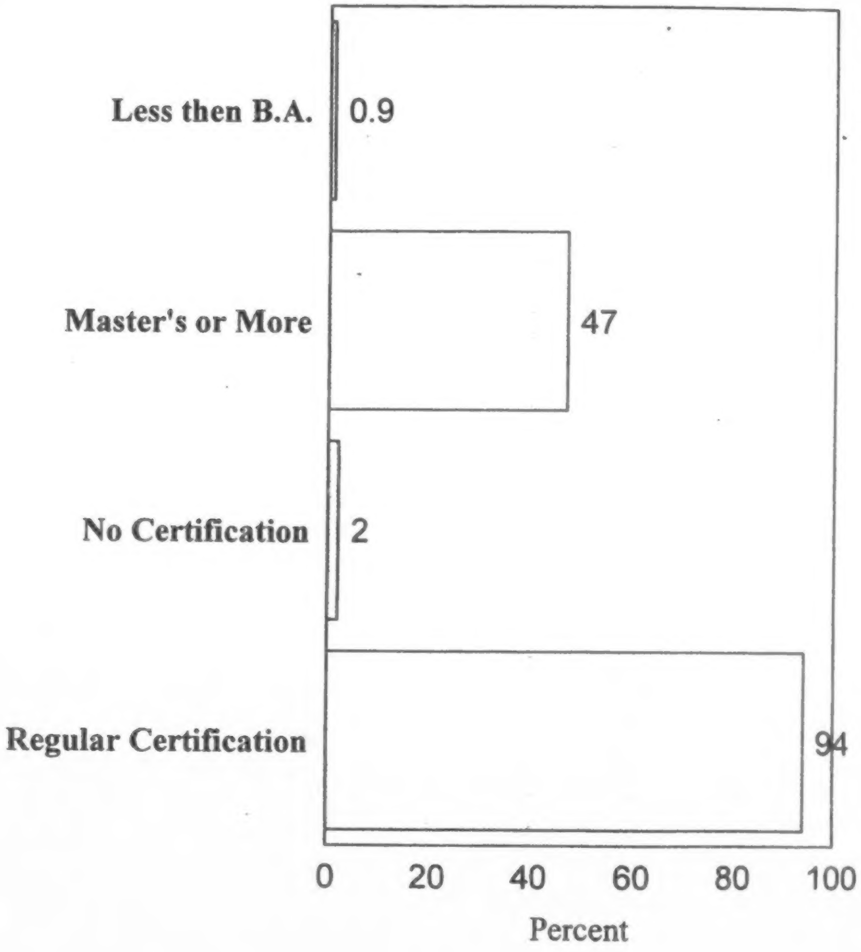
Other reforms are feasible, which I would be happy to discuss with you, as convenient.

Figure 1 - Percentage of public high school (grades 9-12) teachers in each field without a major or minor in that field



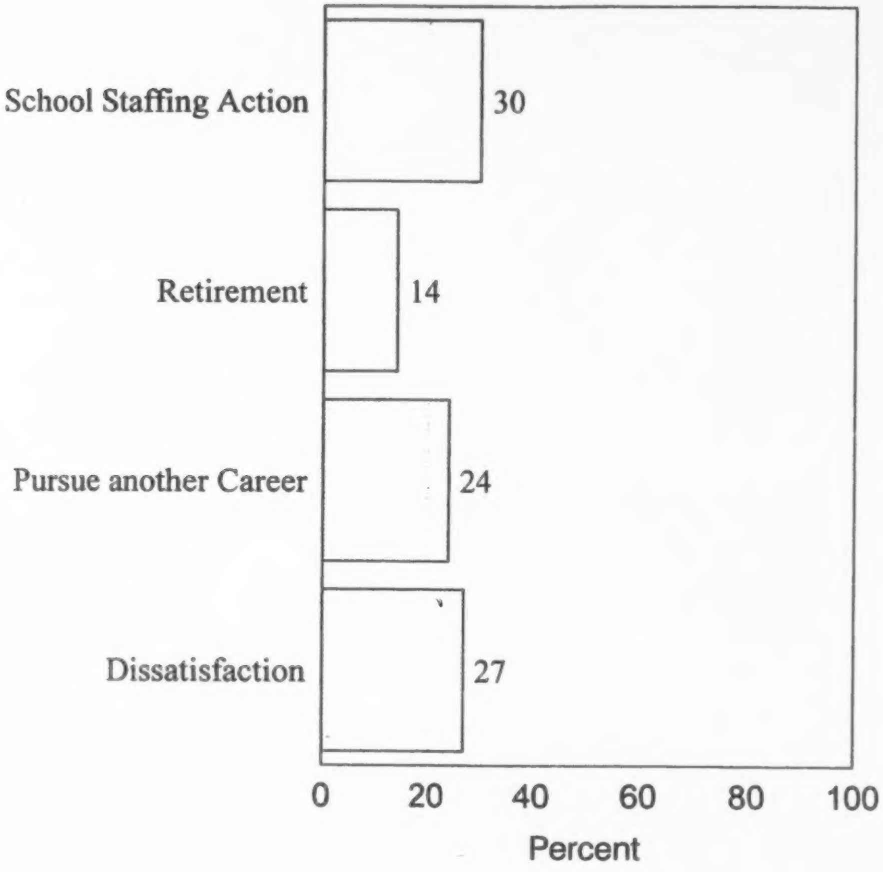
DATA SOURCE: 1993-94 Schools and Staffing Survey

Figure 2 - Percentage of public school teachers, by education and certification



DATA SOURCE: 1993-94 Schools and Staffing Survey

Figure 3 - Reasons public school teachers give for moving from or leaving their teaching jobs



DATA SOURCE: 1991-92 Teacher Followup Survey of the Schools and Staffing Survey

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Ingersoll, R. *The Problem of Out-of-Field Teaching in American High Schools.* Unpublished manuscript, Department of Sociology, University of Georgia.

Richard M. Ingersoll, a former high school teacher, holds a Ph.D. from the University of Pennsylvania and is currently an assistant professor in the Sociology Department at the University of Georgia. He is the author of numerous articles and studies of teachers. His research on out-of-field teaching has appeared in a number of recent education reports, including *What Matters Most: Teaching for America's Future*, 1996, and *Doing What Matters Most: Investing in Quality Teaching.*, 1997, both by the National Commission on Teaching and America's Future; *Quality Counts*, 1998, a special supplement to *Education Week* newsmagazine; and *Education Watch*, 1996, by the Education Trust of the American Association for Higher Education.

Feb., 1998

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Publications:

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"The Problem of Out-of-Field Teaching in American High Schools."
National Association of State Boards of Education (January, 1998)
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"The Effects of Professionalization on Teachers: a Multilevel Analysis."
American Educational Research Association Annual Meeting (March, 1997).
"National Data on Teachers."
National Commission on Teaching and America's Future (February, 1997)
"Whatever Happened to the Teacher Shortage?"
American Sociological Association Annual Meeting (August, 1996).
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"National Data on the Status of Teaching as a Profession."
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"Teacher Supply and Demand in the U.S."
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"Teacher Qualifications and School Inequality."
American Sociological Association Annual Meeting (August, 1995).
"Teacher Professionalism: Who and Where."
National Forum for Education Statistics (July, 1995).
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Presentations: (continued)

"Teacher Shortages and Teacher Quality"
American Statistical Association Annual Meeting (August, 1994).
"Teachers Teaching Subjects for Which They have Little Training: National Data on the Supply of Qualified Teachers." National Forum for Education Statistics (July, 1994).
"Private/Public School Differences: The Teachers' Viewpoint."
National Forum for Education Statistics (July, 1994).
"Teacher Turnover: Sources of Variation."
American Educational Research Association Annual Meeting (April, 1994).
"Problems of Student Discipline: An Organizational Explanation."
American Educational Research Association Annual Meeting (April, 1994).
"Educational Research and the Schools and Staffing Survey."
U.S. Census Bureau (December, 1993)
"Organizational Control in Secondary Schools"
American Sociological Association Annual Meeting (August, 1993).
"Participation in School Decision Making."
National Forum for Education Statistics (July, 1993).
"School Centralization: Levels, Variations and Determinants."
American Educational Research Association Annual Meeting (April, 1993).
"School Centralization and School Conflict."
American Educational Research Association Annual Meeting (April, 1993).
"Organizational Centralization and Workplace Climate"
Eastern Sociological Society Annual Meeting (March, 1993).
"A Critique of Institutional Theories of Organization: The Case for Schools,"
American Sociological Association Annual Meeting (August, 1992).
"Teacher Empowerment."
National Forum for Education Statistics (July, 1992).
"National Data on Teacher Empowerment and its Consequences."
American Educational Research Association Annual Meeting (April, 1992).
"AERA's Grant Program: Reports from Research Fellows"
American Educational Research Association Annual Meeting (April, 1992).
"Power and Conflict in Educational Organizations"
Eastern Sociological Society Annual Meeting (March, 1992).
"Conflict and Control in Educational Organizations"
Center for Research in Human Development and Educ., Temple Univ. (March 1992).
"School Structure and School Problems."
National Center for Education Statistics (December, 1991).
"Teacher Empowerment: Its Levels, Variations and Consequences."
National Center for Education Statistics (November, 1991).
"Coupling and Control in Educational Organizations."
American Educational Research Association Annual Meeting (April, 1991).
"Teacher Empowerment: An Analysis of Organizational Control in Schools."
Workshop - Department of Education, University of Chicago (March, 1991).
"Organizational Coupling and Control."
Sociology Department, University of Pennsylvania (Dec., 1990).
"Beyond Loose Coupling: The Politics of Rationality in Organization Theory."
American Sociological Association Annual Meeting (August, 1989).
"Dating Markets: Social Construction and Rationality."
American Sociological Association Annual Meeting (August, 1989).

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"The Deconstruction of Rationality in Organization Theory."
Eastern Sociological Society Annual Meeting (March, 1989).
"Educational Organizations as Tightly Coupled Systems."
American Sociological Association Annual Meeting (August, 1988).
"The Rationality of School Ritual: Beyond Institutional Theories of Education."
Eastern Sociological Society Annual Meeting (March, 1988).

Professional Activities:

Consultant - *Quality Counts*, 1998, a special supplementary issue to *Education Week*.
Consultant - National Commission on Teaching and America's Future (1997)
Consultant - Columbia Group Southeastern Education Partnership Network. (1997)
Consultant - EducationTrust of the American Association for Higher Education (1996-1998)
Member - Technical Review Panel, National Center for Education Statistics, U.S. Department of Education (1997 -)
Chair and Discussant - sessions at American Educational Research Association Annual Meeting (April, 1996).
Organizer and Chair - "Revisiting the Public/Private Debate: National Data from NCES" and "Teacher Supply, Demand and Quality: An Update." - two symposia for AERA Annual Meeting (April, 1995).
Discussion Leader - Conference on "Implementing Recent Federal Education Legislation," sponsored by the Sociology of Education Section of the ASA, Tampa, FL. (Jan, 1995).
Journal Reviewer - Administrative Science Quarterly. Sociology of Education. American Journal of Education. American Educational Research Journal.
Presider - Panel on "Issues for the 1990's," Eastern Sociological Society Annual Meeting (1991).
Assistant Coordinator - "Universities, Community Schools and Community Development" - two conferences, University of Pennsylvania (Dec. 1988, 1990).

Memberships:

American Sociological Association
American Educational Research Association
Society for the Study of Social Problems
Southern Sociological Society
Academy of Management
American Statistical Association

Committee on Education and the Workforce

Witness Disclosure Requirement – "Truth in Testimony"
Required by House Rule XI. Clause 2(g)

Your Name: RICHARD M. INGERSOLL		
1. Are you testifying on behalf of a Federal, State, or Local Governmental entity?	Yes	[✓ No]
2. Are you testifying on behalf of an entity other than a Government entity?	Yes	[✓ No]
3. Please list any federal grants or contracts (including subgrants or subcontracts) which you have received since October 1, 1994: SUBCONTRACT – NATIONAL CENTER FOR EDUCATION STATISTICS U.S. DEPT. OF EDUCATION (#RN 93140001) (1994-1996)		
4. Other than yourself, please list what entity or entities you are representing: NONE		
5. If your answer to question number 2 is yes, please list any offices or elected positions held or briefly describe your representational capacity with the entities disclosed in question number 4:		
6. If your answer to question number 2 is yes, do any of the entities disclosed in question number 4 have parent organizations, subsidiaries, or partnerships to the entities for whom you are not representing?	Yes	No
7. If the answer to question number 2 is yes, please list any federal grants or contracts (including subgrants or subcontracts) which were received by the entities listed under question 4 since October 1, 1994, including the source and amount of each grant or contract:		

Signature: Richard M Ingersoll Date: 2/23/98

Please attach this sheet to your written testimony.

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The
Education
Trust

Out of Field Teaching in Grades 7 Through 12 by State, Race, and Poverty

Data prepared for The Education Trust by Richard Ingersoll, The University of Georgia, based on 1993-94 SASS data.
Ranking by Andrea Smith and Rashandra Jackson, The Education Trust.
February, 1998

OVERALL OUT-OF-FIELDS TEACHERS

STATE	OVERALL RANK	PERCENT OUT-OF-FIELD
Alabama	28	15.78
Alaska	51	29.45
Arizona	41	20.02
Arkansas	20	14.05
California	47	21.76
Colorado	30	16.29
Connecticut	16	13.37
Delaware	46	21.62
District of Columbia	22	14.56
Florida	40	19.91
Georgia	26	15.61
Hawaii	49	22.65
Idaho	35	18.52
Illinois	13	12.9
Indiana	7	12.13
Iowa	3	9.82
Kansas	21	14.35
Kentucky	43	20.52
Louisiana	36	18.67
Maine	42	20.44
Maryland	31	17.46
Massachusetts	25	15.18
Michigan	5	11.7
Minnesota	1	9.68
Mississippi	44	20.67
Missouri	17	13.38
Montana	15	13.11
Nebraska	12	12.85
Nevada	11	12.52
New Hampshire	8	12.32
New Jersey	48	22.01
New Mexico	45	20.91
New York	9	12.36
North Carolina	33	17.78
North Dakota	2	9.74
Ohio	27	15.69
Oklahoma	14	13.05
Oregon	38	18.77
Pennsylvania	6	12.02
Rhode Island	4	9.94
South Carolina	37	18.75
South Dakota	24	15.05
Tennessee	39	19.19
Texas	32	17.56
Utah	18	13.42
Vermont	29	16.04
Virginia	23	14.89
Washington	50	22.7
West Virginia	34	18.43
Wisconsin	10	12.51
Wyoming	19	13.91

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OUT-OF-FIELD TEACHERS IN HIGH-MINORITY SCHOOLS

STATE	HIGH-MINORITY RANK	HIGH-MINORITY PERCENT
Alabama	4	11.63
Alaska	32	41.73
Arizona	25	22.2
Arkansas	5	13.34
California	27	22.66
Colorado	3	11
Connecticut	17	19.24
Delaware	N/A	N/A
District of Columbia	7	14.15
Florida	24	21.88
Georgia	8	14.53
Hawaii	28	22.82
Idaho	N/A	N/A
Illinois	19	19.78
Indiana	N/A	N/A
Iowa	N/A	N/A
Kansas	N/A	N/A
Kentucky	N/A	N/A
Louisiana	16	18.68
Maine	N/A	N/A
Maryland	20	19.87
Massachusetts	10	15.89
Michigan	9	15.41
Minnesota	N/A	N/A
Mississippi	22	20.86
Missouri	N/A	N/A
Montana	23	20.9
Nebraska	N/A	N/A
Nevada	N/A	N/A
New Hampshire	N/A	N/A
New Jersey	30	26.31
New Mexico	26	22.26
New York	14	17.87
North Carolina	29	24.11
North Dakota	12	16.7
Ohio	31	30.13
Oklahoma	2	9.94
Oregon	N/A	N/A
Pennsylvania	6	14.05
Rhode Island	N/A	N/A
South Carolina	18	19.28
South Dakota	N/A	N/A
Tennessee	13	17.28
Texas	15	18.18
Utah	N/A	N/A
Vermont	N/A	N/A
Virginia	11	16.45
Washington	21	20.48
West Virginia	N/A	N/A
Wisconsin	1	8.84
Wyoming	N/A	N/A

OUT-OF-FIELD TEACHERS IN HIGH-POVERTY SCHOOLS

STATE	HIGH-POVERTY RANK	HIGH-POVERTY PERCENT
Alabama	12	17.72
Alaska	32	47.83
Arizona	29	28.45
Arkansas	5	12.27
California	18	22.81
Colorado	N/A	N/A
Connecticut	N/A	N/A
Delaware	N/A	N/A
District of Columbia	N/A	N/A
Florida	17	22.3
Georgia	28	28.84
Hawaii	N/A	N/A
Idaho	N/A	N/A
Illinois	4	12.11
Indiana	N/A	N/A
Iowa	7	13.67
Kansas	N/A	N/A
Kentucky	27	27.86
Louisiana	15	21.79
Maine	N/A	N/A
Maryland	N/A	N/A
Massachusetts	N/A	N/A
Michigan	10	15.81
Minnesota	1	4.58
Mississippi	19	23.04
Missouri	N/A	N/A
Montana	25	26.78
Nebraska	2	7.25
Nevada	N/A	N/A
New Hampshire	N/A	N/A
New Jersey	23	24.9
New Mexico	26	27.21
New York	16	22.2
North Carolina	31	46.79
North Dakota	11	16.82
Ohio	30	41.39
Oklahoma	6	12.88
Oregon	N/A	N/A
Pennsylvania	3	9.23
Rhode Island	N/A	N/A
South Carolina	14	21.26
South Dakota	8	14.17
Tennessee	20	23.73
Texas	22	24.31
Utah	N/A	N/A
Vermont	N/A	N/A
Virginia	9	15.78
Washington	24	25.4
West Virginia	21	24.16
Wisconsin	13	20.15
Wyoming	N/A	N/A

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APPENDIX H- MS. FEISTRITZER

STATEMENT OF C. EMILY FEISTRITZER
PRESIDENT
NATIONAL CENTER FOR EDUCATION INFORMATION
WASHINGTON, DC

SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES
COMMITTEE ON EDUCATION AND THE WORKFORCE
UNITED STATES HOUSE OF REPRESENTATIVES

TEACHER PREPARATION AND CLASSROOM SIZE REDUCTION
Tuesday, February 24, 1998
2175 Rayburn House Office Building
Washington, DC

I. TEACHER SUPPLY AND DEMAND

The Administration and the Congress of the United States are being called upon – again – to respond to a projected demand for additional teachers in this nation.

The demand for more teachers is based on enrollment increases, increased retirements of teachers, general attrition, and most recently, efforts to reduce class size.

The current projections call for 2 million new teachers in the next decade or 200,000 new teachers per year for the next ten years.

But before millions -- or billions -- of additional dollars are spent to recruit, train and certify millions of new teachers, many of whom will never find a teaching job, the Administration and Congress need to look beyond these numbers at some of the realities behind this so-called "teacher crisis."

First of all, none of these numbers are cause for alarm. They do beg for context, clarity and definition.

Changing definitions of "new teacher" muddle the issue. "New teacher" can refer to new to the nation, new to a particular state, new to a school district, new to a school building, new teacher graduate or brand new to teaching. Another complicating variable in the teacher shortage issue is how teachers are counted -- whether or not part-time teachers, substitutes, private school teachers are included in the counts.

When most people hear that we'll need 200,000 new teachers every year for the next decade, they think it means brand new teachers -- people who have never taught before. Well, that is not what it means. That projection means that 200,000 teachers may be "newly hired" in a given year. To illustrate, 200,000 people who are not currently teaching in the 1997-98 school year might be hired to teach in the 1998-99 school year. They will be counted as "new" teachers, even though a large number of them will actually be former teachers coming back into the profession or people who trained to teach at some earlier time, but were not attending college the year immediately prior to being hired.

According to the National Center for Education Statistics Schools and Staffing Survey, 5.8 percent of the total teacher workforce of 2.39 million were "newly hired" in 1993-94 (the latest year for which these data are available). Of these 139,000 "newly hired" teachers, fewer than half (42 percent) were "newly minted" teachers, that is, teachers who had just finished a college program and had never taught before. Nearly one-fourth (24 percent) of them were "delayed entrants" -- people teaching for the first time, but who were doing something else other than going to college the year before teaching. The remaining third of "new" teachers were actually former teachers coming back into the profession. Six years earlier, more than half of the "new" teachers hired in 1987-88 (52 percent) were actually teachers re-entering the profession.

The largest teachers' union, the National Education Association, reported in its *Status of the American Public School Teacher, 1995-96* that only 2.1 percent of the 2.164 million public school teachers that year were teaching for their first year. That translates into approximately 44,000 teachers.

A survey of public school teachers conducted by our National Center for Education Information revealed the same thing -- about two percent of teachers said they had one year's teaching experience.

These statistics are terribly important. The bottom line is the nation is hiring -- and is projected to need to hire -- approximately 45,000 newly minted teachers per year. That is a far cry from 200,000!

Now, just how many newly minted teachers is the country already turning out each year?

According to the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 106,079 bachelor's degrees in education were conferred in 1994-95, the latest year for which NCES has published data. In addition, 101,242 Master's degrees in education and 6,905 doctorates in education were conferred. Every year in this decade, colleges and universities have been awarding more than 100,000 bachelor's degrees in education alone. The education field is second only to business in number of degrees conferred.

There were more than 6 million people holding at least a bachelor's degree in education in the United States in 1993, according to the Bureau of the Census, which published these data last year. They account for 16.2 percent of all bachelors' degree holders in the country.

Most people who get a bachelor's degree in education are considered "qualified to teach." In fact, experts who are claiming that there are too many "unqualified" teachers teaching define "qualified to teach" as someone who has gone through a college education program approved by the state department of education which has the authority to then confer a license to teach.

There are a lot of people out there who, by this definition, are fully "qualified to teach' BUT who are not teaching -- more than 4 million of them! It's been known for a long time that only about a third of fully qualified teachers who graduate from the nation's 1200 or so colleges that train teachers in any given year are actually teaching the following year.

Of note in this discussion is the fact that only about three out of four current teachers have a bachelor's degree in education. One fourth have a bachelor's degree in a field other than education.

Will -- without doing anything differently -- there be enough teachers to meet the demands of the next decade?

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The 1996 Metropolitan Life survey of public school students in grades 9 through 12 revealed that 8 percent said they were "very interested" in becoming a teacher. An additional 23 percent said they were "somewhat interested." That's about one-third of approximately 13 million high school students expressing some interest in becoming a teacher. If the 8 percent who said they were "very interested" in becoming a teacher actually become teachers, it would translate into more than a million new teachers! -- That's four years' worth of current high school students producing half of the projected demand for "new" teachers in the next 10 years.

Another set of studies by the U.S. Department of Education concerning expected occupations of 8th, 10th and 12th graders by age 30 showed that 7.5 percent of 12th graders in 1992 (the latest year for which the Department has published data) expected to be teaching by age 30. That translates into about 182,000 "teachers" out of that class of high school seniors alone.

These data go on and on. The proportion of high school students taking the Scholastic Aptitude Test (SAT) who indicate they intend to major in education when they go to college has been steadily rising and is currently about 7 percent. Recruiting New Teachers (RNT), which gets millions of dollars to "recruit new teachers" reports that more than a million people have contacted them regarding interest in a teaching career. Teach for America, another nonprofit effort to get young, non-education degreed college graduates into teaching has no problem , with far more people wanting to get in their program than they are able to accommodate or find jobs for.

And all of these programs and all of these statistics pertain to the young.

Probably the biggest change that has occurred in this arena is the huge interest in teaching from older people -- life experienced people from other careers, early retirees from the military and other occupations, former teachers, people who have raised their own families and want to teach.

It is this huge market that is most ill served by the current system -- from the colleges that historically have had responsibility for training teachers, to the state departments that are responsible for licensing them , to the schools that are ultimately responsible for hiring teachers.

The current system was designed for high school graduates who go to college, complete an undergraduate state approved college teacher education program, resulting in a license to teach in that state , and who then get hired by a school district which generally assigns teachers on the basis of filling vacancies, not necessarily, qualifications.

The current system has produced – and continues to produce – far more people "fully qualified to teach" than the system can hire. So, why all the alarms about teacher shortages? Some of the obvious reasons are:

- The demand for additional teachers is not uniform throughout the nation. The demands for new teachers are greatest in inner cities and in specific subject areas, such as special education and bilingual education.
- Only about four percent of students in traditional college teacher education programs say they are interested in teaching in inner cities.
- The vast majority of teacher education candidates want to teach near where they currently live.
- Many people who get education degrees never intend to use the degree to teach.
- Licensing of teachers is structured such that mobility across state lines is difficult.

II. ALTERNATIVE TEACHER CERTIFICATION -- AN OVERVIEW

Alternative teacher certification offers a viable solution to both teacher quantity and teacher quality demands.

The alternative teacher certification movement rose out of a need for more and better teachers. Faced with the threat of teacher shortages and concern about the quality of the teaching force, states have stepped forward to meet the demand. They have developed *new* avenues whereby people could come into the teaching profession.

These alternative teacher certification routes provide opportunities for people from various educational backgrounds and walks of life to become teachers. They have opened doors to teaching for persons from other careers, from the military, from liberal arts colleges, former teachers who want to upgrade their credentials and get back into teaching and for people who trained to teach years ago but never did.

The National Center for Education Information (NCEI) has been polling the state departments of education annually since 1983 regarding teacher education and certification. We have found a rapid development of alternative routes at the state level. By 1997, 41 states, plus the District of Columbia, report having some type of alternative teacher certification program. States report a total of 117 programs now available for persons who already have a bachelor's degree and want to become licensed to teach. It is estimated that more than 75,000 persons have been licensed through such state-run programs. Thousands more are being licensed to teach who are participating in college alternative teacher preparation programs.

The term "alternative teacher certification" has been used to refer to every avenue to becoming licensed to teach -- from emergency certification to very sophisticated and well-designed programs that address the professional preparation needs of the growing population of individuals who already have at least a baccalaureate degree and considerable life experience who want to become teachers.

To understand how alternative teacher certification evolved, it is necessary to understand

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the process by which individuals become licensed to teach in the United States.

The authority for licensing teachers lies within each state in the United States. The regular route for licensing teachers is "the approved college teacher education program route." This process means that a college or university submits a plan for a teacher preparation program for each discipline and/or grade level(s), following state-established guidelines, which the state then "approves." A candidate for a teaching license applies directly to a college or university, takes the required courses and meets other specified requirements, such as student teaching, passage of tests, and any other requirements specified by the college's "approved program". Upon completion of the "approved program", the candidate is then granted a regular or standard license to teach.

The requirements for obtaining a license to teach through approved program routes vary enormously -- not only from state to state but from institution to institution.

Some states require passing different tests and differing lengths of time spent student teaching. Some require observation in schools before student teaching. Some institutions of higher education have added a "fifth year' to their teacher education programs. Others have added internships. Others have done away with undergraduate teacher preparation programs altogether -- and just have a postbaccalaureate program of teacher preparation.

Some states require only the initial certificate; other states require a second or third stage certificate -- sometimes with continuing education requirements and sometimes resulting in a life or permanent certificate.

The terminology used for various types of teaching licenses is terribly confusing. There are 30 different titles used for the initial teaching certificates, and more than 50 titles used for the second stage teaching certificates throughout the 50 states and the District of Columbia.

In an effort to simplify the process, alternative teacher certification has evolved as a respectable and sensible route for licensing teachers and has spawned many new programs that provide excellent preparation and training for a career in teaching.

Most of these programs are collaborative efforts among state departments of education whose responsibility it is to license teachers, colleges and universities that historically have had the responsibility for educating and training teachers, and school districts that actually hire teachers.

Alternative teacher preparation and certification programs focus on getting prospective teachers into actual teaching situations working with a mentor teacher early in the program. While this is a major criticism by teacher education experts, teachers themselves report that "one's own teaching experiences" followed by "other teachers/colleagues" and "courses in subjects to be taught" are the most valuable to them in developing competence to teach. The least valuable were "the college of education faculty", "inservice activities" and "education methods courses."

Growing numbers of governors, state commissioners of education, deans of education and other political and educational leaders are stepping forward in favor of some type of alternative certification. Local school administrators, school board presidents, parents of school children, and the general public also recognize the value of alternate routes as a means of improving America's educational system. The 1996 NCEI survey of teachers showed that more than half (54 percent) of public school teachers and 68 percent of teachers in private schools agreed that recruiting adults who have experience in careers other than teaching would improve America's educational system.

Despite the growing interest in alternative routes for certifying teachers, most states' programs are underutilized, due primarily to opposition from state officials and colleges within the state that control teacher education and certification.

However, states such as California, New Jersey and Texas that have been aggressive in using their alternative programs not only to meet the demand for more teachers, but also to improve the quality of their teaching force, report huge success on both fronts.

Many in this nation have expressed concern about the declining numbers of minority teachers coming through traditional teacher education programs and, consequently, the declining proportion of the teaching force that is minority.

The use of alternate routes gives promise of increasing the representation of minorities in the nation's teaching force. Nationally, nine percent of public school teachers are minorities. This compares with about a third of teachers coming through alternative routes who are minorities.

Other areas of concern regarding demand for teachers are inner cities, bilingual education, special education and mathematics and science. Data support that response to those demands can be met. Surveys of individuals who had inquired about alternative teacher certification conducted by the National Center for Education Information in summer 1992 showed widespread interest in teaching in all parts of the country, all types of communities -- including inner cities -- and in all subject areas. Eighteen percent of those surveyed said they would teach in *any* state, and 44 percent said they were willing to teach in inner cities, 85 percent in small, non-rural towns, 69 percent in rural areas and 85 percent in suburban regions.

Alternative routes for preparing and licensing teachers are attracting large numbers of highly qualified, talented and enthusiastic individuals to the teaching profession. Applicants to these programs number in the thousands. Interest in these programs is immeasurably large. Most of these individuals are highly educated, life-experienced adults who want to teach and to improve America's educational system. Many of them think alternative routes not only make the most sense, but also provide the best preparation for the real world of teaching.

The Administration and Congress could well serve the nation by directing attention to the realities of the demand for teachers, the changing populations available and eager to respond to the demand and to changing the ways teachers are recruited, trained, certified and hired.

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RESUME

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1980 - present President and founder of the NATIONAL CENTER FOR EDUCATION INFORMATION (NCEI), a private, non-partisan research organization in Washington, D. C. specializing in survey research and data analysis.

In that capacity, Dr. Feistritzer has conducted several national and state studies which include: surveys of teachers, school administrators, school board presidents, state departments of education, university colleges of education, local school districts and individuals interested in becoming teachers. In that time, Dr. Feistritzer has authored 24 widely acclaimed data-based books on education:

ALTERNATIVE TEACHER CERTIFICATION: A State by State Analysis (1997, 1996, 1995, 1993-94, 1992-93, 1991 and 1990

PROFILE OF TEACHERS IN THE U.S. (1996, 1990 AND 1986)

WHO WANTS TO TEACH? (1992)

SURVEY OF ARMY PERSONNEL INTERESTED IN TEACHING (1992)

REPORT CARD ON AMERICAN EDUCATION: A STATE-BY-STATE ANALYSIS 1972-73 TO 1992-93

PROFILE OF SCHOOL BOARD PRESIDENTS IN THE U.S. (1989)

PROFILE OF SCHOOL ADMINISTRATORS IN THE U.S. (1988)

TEACHER SUPPLY AND DEMAND SURVEYS (1988)

CHEATING OUR CHILDREN: WHY WE NEED SCHOOL REFORM (1987)

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THE MAKING OF A TEACHER: A REPORT ON TEACHER EDUCATION AND CERTIFICATION (1984)

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THE AMERICAN TEACHER (1980)

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1979 - present	**Publisher and founder of Feistritzer Publications, which publishes independent newsletters, including *Teacher Education Reports*, a bi-weekly newsletter covering aspects of teacher professional development at all levels.** **In addition, Dr. Feistritzer has testified before the United States Congress and state legislatures, delivered numerous speeches and authored scores of articles in professional journals on education. Her work has been covered by professional journals, newspapers and periodicals across the country. She has appeared on numerous radio and television broadcasts to discuss educational issues.**

Professional roles before founding NCEI in 1980 and Feistritzer Publications in 1979:

1977-79	Coordinator of the U.S. Commissioner of Education's National Teacher Development Initiative (compiled report of all programs for professional development funded by the U. S. Office of Education)
1976-77	Director, Union Graduate School, Yellow Springs, Ohio
Summer 1976	Designed the Site-Specific Orientation Program for the U.S. Teacher Corps Program, Washington, D.C.
1974-76	Director, South Carolina Teacher Corps Program
1973-76	Assistant Professor of Education, University of South Carolina, Columbia, South Carolina
1971-1973	Coordinator, Student Teacher Program, Indiana University, Bloomington, Indiana
1961-1970	High school science and mathematics teacher, Covington, Kentucky
1970	Co-author of secondary science textbook, Giant Steps Through Science

EDUCATION

Ph.D.	1973	Indiana University, Bloomington, Indiana Major: Curriculum and Instruction Minors: Urban Affairs and Religious Studies
M.T.S.	1970	College of William and Mary, Williamsburg, Virginia Major: Physics Education Minors: Mathematics Education
B.A.	1966	Thomas More College, Covington, Kentucky Major: Biology Minors: Mathematics and Chemistry

Committee on Education and the Workforce
Witness Disclosure Requirement – "Truth in Testimony"
Required by House Rule XI. Clause 2(g)

Your Name: C. Emily Feistritzer		
1. Are you testifying on behalf of a Federal. State. or Local Governmental entity?	Yes	No X
2. Are you testifying on behalf of an entity other than a Government entity?	Yes	No X
3. Please list any federal grants or contracts (including subgrants or subcontracts) which you have received since October 1. 1994: None.		
4. Other than yourself, please list what entity or entities you are representing: None		
5. If your answer to question number 2 is yes, please list any offices or elected positions held or briefly describe your representational capacity with the entities disclosed in question number 4:		
6. If your answer to question number 2 is yes, do any of the entities disclosed in question number 4 have parent organizations, subsidiaries, or partnerships to the entities for whom you are not representing?	Yes	No
7. If the answer to question number 2 is yes, please list any federal grants or contracts (including subgrants or subcontracts) which were received by the entities listed under question 4 since October 1, 1994, including the source and amount of each grant or contract:		

Signature: C. Emily Feistritzer Date: 2/16/98

Please attach this sheet to your written testimony.

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APPENDIX I- MR. BALLOU

2/19/98

Training and Licensing the Nation's Teachers: Why We Should *Not* Follow the Recommendations of the National Commission on Teaching and America's Future

Dale Ballou and Michael Podgursky [1]

Introduction

In the last two years the system by which the nation trains and licenses its public school teachers has come under attack by an organization called the National Commission on Teaching and America's Future (NCTAF). In a 1996 report entitled What Matters Most: Teaching for America's Future, the commission charged that public schools employ large numbers of "unqualified" teachers, largely as a result of inadequate and poorly enforced standards for teacher training and licensing. The report was greeted as a "scathing indictment" of the current system and was widely publicized by the media.

What is the NCTAF? Its name notwithstanding, the NCTAF holds no "commission" from any elected official. It is a private organization, funded by the Rockefeller and Carnegie Foundations. Although the NCTAF claims that its report is not the work of education insiders, the largest block of members comes from major education organizations and education schools, including the two major teacher unions, the NEA and AFT. Remarkably, for a body that claims to represent the public interest on issues of education policy, the commission also includes leaders of private organizations that have a direct and substantial financial stake in the adoption

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[1] Department of Economics, Thompson Hall, University of Massachusetts, Amherst, MA 01003 and Department of Economics, 118 Professional Building, University of Missouri, Columbia, MO 65203, respectively.

of the commission's recommendations, among them the National Council for Accreditation of Teacher Education (NCATE) and the National Board for Professional Teaching Standards.

The NCTAF Plan

The commission blames current conditions on state education departments and many teacher education programs:

> Because most states do not require schools of education to be accredited, only about 500 of the nation's 1200 education schools have met common professional standards. States, meanwhile, routinely approve all of their teacher education programs, including those that lack qualified faculty and are out of touch with new knowledge about teaching. (WMM, p. 28)

As a remedy, the NCTAF offers a sweeping plan to "professionalize" teaching, shifting control of accreditation and certification from local school boards and state education agencies to private education organizations. These groups of education professionals would be empowered to set standards for how teachers will be trained, tested, hired, and promoted.

A key element of the commission's program calls for all teacher education programs to meet "professional standards" or be closed. By this, the commission means obtaining accreditation from the aforementioned accrediting body, NCATE. The commission also calls for establishing an independent professional board in every state to set standards for teacher licensing. The commission's proposals extend to the assessment and compensation of experienced teachers as well. The NCTAF calls for states to establish goals and incentives for National Board Certification in every state and district, with the aim of certifying 105,000 teachers in this decade as master teachers, one for every school in the United States.

What's Wrong with the NCTAF Plan?

As economists who have studied labor markets for public and private school teachers, we have serious doubts about the direction in which the NCTAF proposals would take public policy.[2] We summarize our concerns in four observations.

1. ***Organizations that would be entrusted with professional self-regulation have demonstrated little if any capacity to improve teacher quality.***

The commission argues that requiring accreditation of teacher education programs by the NCATE would do much to ensure that teachers are carefully selected and receive instruction in state of the art pedagogical methods. According to the commission, graduates of NCATE-accredited programs will be better prepared for the challenges of the classroom and that their rate of attrition will be lower as a result. They will exhibit a higher degree of professionalism in their relations with students and colleagues.

The NCTAF's 1996 report offered no evidence to support these claims. As far as we can determine, they are not true. Using data from surveys conducted by the Department of Education, we have compared NCATE to non-NCATE teachers on a number of dimensions related to professionalism and career commitment[3]. There were no statistically significant differences between the two groups. Perhaps more revealing, there is no evidence that those hiring new teachers think so either. The percentage of non-NCATE applicants who found a teaching job was as high as among NCATE applicants. The jobs they received paid as well.

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[2] A longer critique of the NCTAF report has been published by the Government Union Review. It can be downloaded from http://www.psrf.org/doc/v174_art.html.

[3] New teachers were asked how long they intended to remain in teaching, whether they would still have chosen to become teachers had they the choice to make again, whether they were so discouraged by their experience that they sometimes felt their efforts were a waste of time, whether they moonlighted after school hours, and how much time they devoted to lesson preparation and grading.

NCATE has accredited teacher education programs in some of the least selective institutions of higher education in the country. Indeed, the academic ability of students graduating from a teacher education program plays virtually no role in determining whether the program will be accredited.[4] While NCATE requires that a program use a test to screen applicants for admission, it does not specify the test to be used or the passing score.

Many schools and departments of education have shown by their decision to forgo NCATE accreditation that they do not believe this stamp of approval is of great value. The list of NCATE-accredited colleges suggests that politics are more important than educational quality in determining whether a school is accredited. Where governors have led, colleges have sought and obtained accreditation. Thus, every college in North Carolina offering a teacher education program has obtained NCATE accreditation. In Arkansas, all but two have it. By contrast, New York has 103 state-accredited programs, but only three accredited by NCATE (Canisius College, Fordham, and Hoftra). Massachusetts has 61 state-accredited institutions of which only 8 hold NCATE accreditation. All are non-selective institutions (e.g., Bridgewater State College). The state's selective private schools, such as Harvard, BU, Brandeis, Smith, and Mt. Holyoke, are not NCATE-accredited (NASDTEC, 1996).

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[4] Thirty percent of the teachers who completed NCATE approved programs attended colleges that were rated less than competitive in Barron's Profiles of American Colleges. In fact, the "competitive" category is not in fact very selective. Between 75% and 85% of applicants are accepted; median SAT scores were between 450 and 525 on the old scale. Thus, whatever the requirements for NCATE accreditation, rigorous admission standards are not among them. This is further evident in responses to the Baccalaureate and Beyond Survey: thirty percent of the newly trained teachers who graduated from NCATE approved programs had SAT or ACT scores in the bottom quartile of college graduates, the same percentage as those who complete non-NCATE approved programs.

The National Board for Professional Teaching Standards. The NBPTS attempts to recognize teacher excellence by bestowing a "National Board Certificate" on worthy applicants. Teachers seeking this recognition submit portfolios for evaluation to the board (located just outside Detroit). The portfolios include videotapes of their teaching, lesson plans, and samples of student work. These materials are reviewed by "experts" -- moonlighting teachers trained by the board. Teachers are also required to take a test at a regional site.

It is not clear what practical good will come of the board's activity. The NBPTS does not claim to make anyone a good teacher, only to identify those who are already superior.[5] Whether it even does this is open to question. The process by which the board assesses teacher quality is highly artificial, relying on a small selection of lesson plans and student work which the teacher culls from his or her practice. There is no input from administrators or parents who have interacted with the teacher on a long-term basis. Indeed, even as the Clinton administration proposed to defray the cost of board certification, it acknowledged this uncertainty by contracting out research to determine, among other things, whether teachers certified by the National Board are more effective.[6]

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[5] In fairness, the board reports that participating teachers find the reflection and self-scrutiny involved in submitting an application useful. But for obvious reasons, the board makes no effort to ascertain whether an equal investment of time and money in some other activity would not be still more valuable.

[6] Incredibly, the National Board itself belongs to the consortium of education organizations that received the contract for this study. The NCTAF and the principal organizations allied with it also belong. Moreover, the research proposal leaves no doubt that they expect to find board certified teachers are better, since elsewhere it stipulates that they are to investigate the training, mentoring, or other professional development activities of board certified teachers, in order to disseminate to the broader education community information on these correlates of "success."

Of course, it may well be that board certified teachers are more effective, not because the board's methods of assessing teachers are particularly discerning, but because for the most part only superior teachers have so far applied. Whether this would remain true if high stakes were attached to board certification is another matter. There have been suggestions that board certification be used as a basis for higher salaries. For example, North Carolina proposes to increase the compensation of board-certified teachers by 15%. This raises the prospect of fraud. National Board certification relies heavily on portfolios of student work and videotapes of teacher performance, all supplied by the teacher. The board does not verify the authenticity of these materials. In these circumstances there are many opportunities to select or edit the materials to present teacher or student performance in a more favorable light. With substantial sums of money at stake, there will inevitably be cheating. Students will be coached on how to behave when video camera is on. Only the best work will make it into the portfolio, and so forth. The Board has not explained how they can maintain the integrity of the process when the opportunities to cheat are so pervasive and the returns to cheating are substantial.

2. ***The organizations that would be responsible for professional self-regulation espouse dubious reforms that have met public resistance and stirred controversy among educators.***

By entrusting the accreditation of teacher education programs and the standardization of licensing requirements to professional organizations, the NCTAF expects to enhance the training prospective teachers receive in pedagogical methods. Such training will reflect "state-of-the-art practices", "incorporating new knowledge" and an evolving "knowledge base for teaching" that makes clearer than before just what teachers should be doing in the classroom. Language of this kind is disconcertingly familiar. Public education in the U.S. has been marked by numerous waves of enthusiasm for newer and better methods that turn out to be passing fads. The succession of these fads does not inspire much confidence in the ability of education schools to ground their curricula in a reliable research literature. Indeed, the organization that the commission would entrust with the accreditation of teacher education programs -- the NCATE -- refers in its manual to "evolving standards," suggesting that this pattern of swinging one way and then the next may not stop with the adoption of the NCTAF proposals.

Indeed, organizations that belong to this accrediting body have issued standards that are highly controversial and of dubious educational value. Two of the constitutent members of the NCATE are the National Council of Teachers of English and the International Reading Association. These organizations have been strong proponents of whole language instruction for reading in the primary grades -- a teaching strategy that has come under withering attack from other educators and is being rejected by parents across the nation who are demanding that their children receive instruction in phonics. A similar process of rejection seems underway for the guidelines recently issued by the National Council for Teachers of Mathematics -- another NCATE constitutent organization. These guidelines, like whole language learning, reflect the enthusaism of teacher educators for student-centered, constructivist learning. Textbooks and curricula inspired by these guidelines have appalled parents and educators who have described the results as "warm, fuzzy mathematics" and "rain-forest algebra." More telling, the constructivist model has itself come under sharp attack. Eminent educators like E.D. Hirsch have written persuasively that much of what passes for progressive pedagogical practice in our schools of education is fundamentally wrong and damaging to children's efforts to learn.

Requiring accreditation of all teacher preparation programs could put NCATE in a position to insist that all reading and mathematics teachers be trained in methods that much of the public has rejected and that remain controversial among educators. Simple prudence would suggest that this is not a wise policy. Ongoing controversies about curriculum and teaching methods are a compelling reason not to grant monopoly powers to a national accrediting agency. Such an agency could actually lower teacher quality over the long term by stifling innovation and preventing competitors with superior ideas from having a chance to demonstrate their merit.

3. ***The commission's reforms would raise barriers to entering the teaching profession, deterring capable individuals who have attractive career options.***

The NCTAF leaves the details about curricular reforms to the councils and professional organizations it would entrust with the accreditation of teacher education and licensing of instructors. Nonetheless, the discussion throughout What Matters Most leaves little doubt that it anticipates an increase in the coursework to be taken by prospective teachers before they will receive a license (certificate) to teach. The commission writes approvingly of five-year programs (as opposed to the conventional four-year undergraduate degree) and year-long clinical internships. It applauds states that require a master's degree for a license. It disparages reforms that reduce the amount of pre-service training in order to streamline entry into the profession.

By raising barriers to entering the profession, such measures will discourage some persons who might have become teachers. Unfortunately, those discouraged are more likely to be the kind of high-ability students with attractive career options that the nation needs as teachers. Indeed, certification as practiced today already deters too many talented individuals from entering the profession. Prospective teachers are required to make an up-front investment of a year or more completing college courses and student teaching before they are licensed. This investment competes with other programs of study for students' time and money. Raising the requirements for teacher education will therefore deter students who are undecided between teaching and other careers with significant academic prerequisites, since additional teacher training leaves less time for the courses that make them more marketable should they pursue other options. Enactment of the NCTAF proposals would tend to screen out (by their own choice) prospective teachers with the interest and ability to pursue other careers, leaving the applicant pool to those who never thought of themselves as anything but teachers. Notice that this would have precisely the opposite effect of other policies that are intended to improve the quality of the teaching pool -- for example, raising salaries. Those who advocate higher pay for teachers do so with the express hope of attracting individuals who are now choosing more remunerative careers in other professions. By contrast, expanding preservice training discourages such persons and leaves teaching to those who won't or can't do anything else that pays as well.

The same argument applies with still greater force to persons already in the work force who are contemplating a career change to become teachers. The practical experience and maturity of many of these individuals make them attractive candidates for teaching. Yet for many the cost of giving up their current employment to return to college is prohibitive. Precisely for this reason many states have adopted alternative certification routes that relax the standard requirements for certification, facilitating the entry of such persons into the profession. Yet the NCTAF, while nominally endorsing the concept of alternative certification, is opposed to programs that would reduce pre-service training. The model of alternative certification that NCTAF supports would have career-changers spend at least a year in a master's program before

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they begin to teach.

Advocates of expanded pre-service training recognize that some teachers will be deterred by these requirements. However, they consider it a reasonable price to pay, pointing to what they take to be an analogous situation in medicine. Doctors spend years in pre-service training and must pass difficult examinations to acquire a license. Why should we expect less of teachers? However, the analogy is ill-founded. The training doctors receive and the examinations they must pass to obtain a license are based on well- researched medical protocols: the efficacy of medical interventions is determined by careful, controlled study of patient outcomes. This is simply not the case in education, where much research into "teaching effectiveness" continues to rely on assessments by classroom observers whose notion of which behaviors count was itself shaped in schools of education. Clear superiority of particular pedagogical practices based on objective, measurable outcomes is rarely demonstrated.[7]

In short, American education would be improved if there were less, not more, regulation of the teacher labor market. Federal policy should therefore encourage states to experiment with innovative means of recruiting and training teachers. Schools need the opportunity to hire from a broader set of applicants, including instructors who have not fulfilled traditional certification requirements if they are sufficiently promising in other regards.

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[7] The much-touted Praxis examinations developed by the Educational Testing Service show how far we have to go in this respect. The Praxis I test, given to beginning teachers, was validated by soliciting the opinions of teachers, education school faculty, and other education professionals in focus groups. These groups were asked what proportion of "minimally qualified" teachers would be able to answer a particular test item correctly. No studies were undertaken to correlate scores on the Praxis with student learning or, indeed, any other measures of teaching performance. According to one ETS official, opposition of teacher unions figured among the reasons for this decision (Ballou and Podgursky, 1997).

Proponents of stronger licensing requirements often react to this statement as if it is tantamount to the claim that anyone can teach. This is absolutely not so. No one is guaranteed a public school job simply by holding a teaching license. Nor should they be. At best, a license indicates only that its holder has met a minimal level of competence. The best way to ensure that the classroom instructors are effective (if not excellent) is first to make certain that hiring decisions are entrusted to good administrators familiar with the needs of their schools and accountable for the education of the children who attend them. Once this condition is met, it should be the goal of policy to untie administrators' hands on hiring decisions by giving them a broader choice of teachers than they now have.

The role played by administrators is a second reason the analogy between teaching and medicine breaks down. The case for medical licensing rests on the premise that consumers are unable to make well-informed decisions about the quality of physician services: there is a complex body of specialized medical knowledge that consumers do not possess. By contrast, many consumers are able to assess the efficacy of the schooling provided their children. Moreover, they are not asked to do it alone. Parents do not hire teachers -- administrators do. When administrators are accountable for student learning -- when they must answer for educational outcomes -- there is far less reason to restrict the decisions they make regarding educational inputs. The appropriate goal of policy is to make sure administrators know what they are expected to achieve, hold them accountable for those results, and empower them to make the managerial decisions necessary to achieve those ends.

This anticipates our final criticism of the commission's recommendations.

4. ***The Commission's proposals reduce local accountability and increase the control of organized producer interests over public education.***

The NCTAF report has arrived at a watershed in American educational policy. Major experiments are underway to deregulate public schools while enhancing their accountability. The rapidly expanding charter school movement is a case in point, though states are experimenting with other incentive and accountability systems as well. Such efforts require that local administrators have the authority to make critical personnel decisions, otherwise they cannot realistically be held accountable for results. By restricting hiring decisions and tying pay and promotion to outside assessments of personnel, the "professionalization" plan proposed by NCTAF would reduce the authority and accountability of local administrators.

One model for deregulation is, of course, the private school sector. Our research on personnel policy in private schools has turned up no evidence that such credentials as National Board certification or NCATE accreditation are widely valued in the private sector. Indeed, private schools, particularly nonreligious schools, often bypass schools of education entirely to hire large numbers of non-certified teachers. During the 1987-88 school year, for example, only fifty-five percent of all teachers in non-religious private schools held state certification in their primary teaching area. This percentage dropped to just 35 percent in secondary schools.[8] Private schools use this flexibility to tap the very large pool of liberal arts majors for capable, knowledgeable instructors.

The behavior of private school administrators indicates that when schools are accountable to the public through consumer choice, little or no value attaches to the kinds of credentials the NCTAF promotes. Indeed, these schools hire many instructors who have had no formal training in pedagogical methods. The burden of proof is on the NCTAF to show why public schools must be compelled to submit to regulations that do not apply to private schools and that would impair the efforts of the latter to supply the educational services demanded by the parents who support them. That burden has not been met.

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[8] More extensive data on teacher recruitment and personnel policy in private schools may be found in Ballou and Podgursky (1997, Chapter 6).

We do recognize the legitimate concern that wider managerial authority might be abused. Proponents of strict licensing standards point to nepotism, political patronage, administrative incompetence, laziness, and bureaucratic red-tape as factors that lead to poor hiring decisions. But the best way to meet these concerns is not to erect barriers that discourage talented people from entering the profession and limit districts' choice of teachers to graduates of teacher education programs. Indeed, the notion that teacher licensing is an appropriate way to deal with poor administration is rather extraordinary. Licensing does nothing to rid school systems of these administrators; it simply boxes them in with respect to hiring decisions. But experience has shown that this is not enough to prevent them from exercising poor judgment in personnel matters (among other things).

Poor administrators need to be removed. Enhancing accountability is a means to this end. But it is also clear that mechanisms for removing poor principals and superintendents are imperfect, and that there will remain some role for state regulation to protect the public from the worst abuses of incompetent or corrupt administration. This role should be a limited one, aimed at screening out incompetent teachers rather than putting obstacles in the way of promising ones. The best way to reach this objective would be to test teachers for basic skills and knowledge of

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the subjects they teach.

By contrast, enacting the NCTAF agenda would strengthen the position of education producers vis-a-vis consumers in a sector where producer interests already carry inordinate weight with policy-makers. Behind the NCTAF and NCATE are the National Education Association and the American Federation of Teachers, whose interest in restricting teacher supply is so obvious that it is astonishing that anyone would contemplate giving these organizations the right to determine who will be allowed to teach. Of the current thirty-one member NCATE executive board, seven are union-appointed, including the president, vice-president and secretary-treasurer of the NEA and the president and vice-president of the AFT. Teams of examiners that visit colleges include at least one teacher drawn from a pool selected by the NEA and AFT.[9] The president of NCATE, Arthur Wise, is also chairman of the National Foundation for the Improvement of Education, an organization created by the NEA to tilt school reform efforts in favor of public school teachers' interests.

Unions also provide financial support for the professional organizations that would be empowered under the NCTAF proposals. The NEA's 1997-98 budget contains $366,600 for NCATE. The same budget contains $306,550 to support the certification through the National Board of Professional Teaching Standards and $213,765 to support efforts "to make licensure...a process controlled by the profession."[10]

It is important to keep in mind that for all the discussion of higher standards and improved training, the NCTAF's recommendations are fundamentally about control. The NCTAF would turn over the accreditation of teacher preparation programs to NCATE. Licensing examinations would be prepared by the Interstate New Teacher Assessment and Support Consortium (INTASC), another private professional organization. The National Board for Professional Teaching Standards would decide who qualifies as a master teacher. Overseeing and guiding all of this activity would be independent professional boards whose members would be drawn, not from the public's elected representatives, but professional education organizations.

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[9] From the NCATE web site and NCATE (1996).

[10] National Education Association (1997, p.32). NCATE itself has refused to release budget information.

It is naive to think that the impact of these changes would be limited to improving the training teachers receive (if it would even accomplish that). These organizations have a vested interest in opposing charter schools and other forms of school choice, and in oppposing alternative certification programs that bypass traditional teacher training. The prospects for such reforms will be much bleaker if power is taken from parents and elected officials who are increasingly responsive to the public's demand for more choice and genuine accountability, and conferred instead on the education organizations aligned with the NCTAF.

Conclusion

The NCTAF agenda is a continuation of failed policies that American education has been following for decades. The central premise of these policies is that the problems of American public schools can be solved by focusing on inputs to education. With regard to teacher quality, this means regulating the labor market. The NCTAF would have us believe that the right kind of training will make graduates of teacher education programs the effective teachers our schools need. They claim that they know what this training needs to be, and seek through legislation to impose their views on all institutions that prepare teachers and all districts that hire them.

This is simply the wrong approach to education reform. For too long policy has focused in just this manner on inputs, an approach that has often been turned to the advantage of producers and suppliers of educational services. It is time to start holding public schools accountable for educational ***outcomes***. We need to make sure administrators know what they are expected to achieve, hold them responsible for those results, and empower them to make the managerial decisions necessary to achieve those ends. This means, among other things, giving them more freedom to hire promising teachers, whatever their prior training.

It is more than a little curious that the NCTAF, which believes so strongly that its way of preparing teachers is best, seeks to impose its agenda through legislation. If the commission's views are right, the commission and the educators allied with it should welcome the opportunity to demonstrate their superiority in a competitive market place. We should all welcome it. The direction for policy is therefore clear. Let us make sure that administrators have appropriate incentives to seek the very best teachers for their schools, and then let us get out of the way so that they can hire them.

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APPENDIX J- MS. HAYCOCK

The
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SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES
COMMITTEE ON EDUCATION AND THE WORKFORCE
UNITED STATES HOUSE OF REPRESENTATIVES

TEACHER PREPARATION AND CLASSROOM SIZE REDUCTION
Tuesday, February 24, 1998
2175 Rayburn House Office Building
Washington, DC

Mr. Chairman and members of the Committee, thank you for providing me with this opportunity to discuss issues of teacher preparation and class size reduction. Right now, a number of forces are converging to create a singular opportunity to significantly boost student achievement and substantially narrow the academic achievement gap that separates low-income and minority students from others. Strong public support to "do something" about the state of public education, the growing body of solid research about the impact of teacher quality on student achievement and the opportunity to revamp the teachers preparation provisions of the Higher Education Act combine to provide you with a golden opportunity to marry good policy and smart politics by taking bold steps to improve the way teachers are trained, hired, placed, and supported.

But let me be clear: inaction or reckless action on either teacher preparation or class size reduction could have devastating effects on over-all student achievement and could widen the academic achievement gap even more. Doing something isn't enough; you must do the right things.

There are a few common sense principles that must be incorporated into effective legislation in both areas:

1. Quality: Both teacher preparation and class size reduction legislation must attend to issues of quality in the teaching force. Specifically, legislation must seek to boost the content area knowledge of teachers and ensure that all teachers have strong teaching skills. This is particularly important with regard to class size reduction policy. Policy that simply increases supply without attention to quality may, in fact, dilute the quality of the teaching force.

2. Equity: As it stands now, students who need the very best teachers are often stuck with the least qualified and the least able teachers. Legislation must ensure that low-income students, minority students, and students struggling in remedial and lower track classes have access to teachers with both deep content area knowledge and strong teaching skills. Again, class size reduction measures that fail to recognize and redress the inequity in the distribution of well-prepared teachers will more than likely make bad matters worse.

3. Scale and Scope: The legislation must be systemic rather than programmatic. The task of providing all students with well-prepared teachers is too large for a limited programmatic approach. A handful of pilot programs is a wholely inadequate response. The stakes for our students…and our national future… are too high to allow for piecemeal approaches. Such a systemic approach demands that Congress leverage change with current federal funds as well as new funds; it demands changes in initial preparation, placement, induction and ongoing professional support of all teachers…not just a few.

4. Accountability: All institutions that use federal funds to prepare teachers—whether those institutions are education schools or institutions offering alternative routes into teaching—must be held accountable for producing teachers who, at a minimum, meet state-established licensure standards. Institutions that cannot demonstrate that they are preparing competent teachers should not expect federal support for teacher preparation. Further, you must demand accountability for the proper hiring and placement of teachers of all entities receiving federal K-12 funds. Improving the preparation of teachers is only half the battle; if state and local administrators continue to miss-assign teachers, the benefits of any improvement in the preparation of teachers will never reach the classroom.

THE PROBLEM:

1. **Teacher Preparation:**

Report after report has documented the fact that we are not producing the caliber of teachers that our children need to succeed in school or in the workplace of the next century.

Teacher preparation programs continue to attract among the least able college students and these students do less well in all of their academic subjects than any other majors except those students studying social welfare. The brighter students eschew education majors calling the classes "mind-numbing" and "deadly dull". Andrea Smith, a bright Sophomore from Bowling Green College currently interning at the Education Trust, started out as an education major but changed majors—to, of all things, political science. Andrea says, " The classes were so watered down, they didn't challenge me at all. If I had stayed in the education program I don't think I would have been qualified to teach anybody anything. That scared me."

Graduates of many teacher education programs have extremely high rates of failure on state licensure exams, some in excess of 50%--a hair-raising statistic given the overall low-level of most of these tests. For example the following questions are included among the questions on the Praxis Core Battery General Knowledge Test, a test widely used by states to assess the subject area knowledge of prospective teachers:

- Social Studies: Place in chronological order the following events: The beginning of the Great Depression, the First World War, The New Deal, The Korean War.
- Mathematics: The average number of passengers who use a certain airport each year is 350 thousand. A newspaper reported the number as 350 million. The number reported in the newspaper was how many times the actual number?

It is not surprising that education programs fail to challenge and students, for in many cases the larger institution of higher education, treats its education school as a "cash cow;

leaching off funds intended for the preparation of teachers to subsidize other university programs and activities.

This state of affairs continues, in part, because too few institutions of higher education are held responsible for the adequate preparation of teachers. For example, the Congressional Research Service estimates that last year institutions of higher education took in $1.8 billion in Pell grants and federally supported student loans for teacher preparation. The federal government provided these funds with absolutely no mechanism to ensure they were being used provide students with adequate preparation to teach. In this way the federal government lags behind a number of states, including Texas and Florida, which now require that education schools demonstrate that they are producing competent teachers in order to receive state support.

2. Teacher Placement:

Entities responsible for hiring and assigning teachers are allowing too many under prepared teachers to teach and assigning teachers to subject areas in which they have too little knowledge. According to the 1997 report of the National Commission on Teaching and America's Future more than 20% of the newly hired teachers in 1994 lacked a license in their main teaching assignment. And nearly one quarter of all secondary school teachers did not hold even a minor in their main teaching assignment. Approximately 56% of our secondary school students taking physical science are being taught by an individual who holds neither a college major or minor in the field, as are 27% of the students taking mathematics and 21% of the students taking English. And the 1997 report of National Education Goals Panel finds things getting worse, not better. According to the Goals Panel, the percentage of secondary school teachers holding a degree in their main teaching assignment *decreased* between 1991 and 1994.

As bleak as the overall situation is, the picture for low-income students and minority students is even bleaker. The least well qualified teachers are most likely to be found in high poverty schools, and predominately minority schools. Whereas only 8% of the public school teachers in low-poverty schools taught without a minor in their main teaching assignment, fully a third of the teachers in high poverty schools were teaching without a minor in their main assignment field and nearly 70% taught without a minor in their secondary assignment field. About one-third of the English classes in high poverty secondary schools are taught by an individual without either a college major or minor in English. In fact, students in schools with the highest minority enrollment have less than a 50% chance of having a science or math teacher who holds both a licenese and a degree in the field that he or she is teaching. It is ludicrous to expect these children to achieve at higher levels when we provide them with teachers who do not know their subject areas.

A grid, prepared for the Education Trust, using data generated by Richard Ingersoll, showing out of field teaching by state, and by race and by poverty is attached to my testimony.

3. Supply issues V. Mismatch Issues

While the projections for 2 million teacher openings over the next decade are probably accurate, it is not clear that the overall supply of teachers will fall substantially short of that. Teacher preparation programs are currently producing between 150,000 and 200,000 teachers a year. The issues are not so much those of over-all supply, but 1) how well those new teachers will be prepared and 2) a serious mismatch between what types of teachers we are providing and what schools need.

There are, in fact, some subject areas--including elementary education, social studies and English—where we have an over supply of teachers. In other critical areas--like mathematics, science special education and bi-lingual education--there's a shortage. Further, there is clearly a serious mismatch between the ethnic/racial composition of our students and that of individuals becoming teachers. Just as our k-12 population is becoming more diverse, our teaching force is becoming less so.

	Students	Current Teachers	Teacher Ed.
AfricanAmerican	16	9	7
Asian	3	1	1
Latino	12	3	4
White	68	86	85

Again, shortages of fully qualified teachers are most severe in high poverty schools both urban and rural. Despite the wide spread perception that out-of-field teaching problem is largely one of "central city schools", the data reveals that the problem is at least as severe in rural areas and small towns. For example, an analysis of 1991 SASS data by Richard Ingersoll of Georgia State University finds Science and Social Studies teachers in rural communities and small towns were slightly more likely than those working in central cities to be teaching out of field.

High poverty urban areas tend to hire underqualified individuals because they are unable to attract and retain fully qualified teachers, not because they can not afford to pay for them. For example, at the beginning of school year 1997-98, the St. Louis school district, in which 90% of the students qualify for free and reduced price lunches, had 300 funded but unfilled teacher openings which they filled with underqualified individuals, including unlicensed teachers and substitute teachers. At the same time, Clayton, St. Louis's wealthy neighbor, where only 13% of students qualified for free and reduced price lunch, had only one teacher teaching on an emergency permit. The St. Louis story is not unusual: of the schools that had vacancies in school year 1993-94, only 2.5 percent of the low-poverty schools reported filling them with less than fully qualified teachers while 11% of the high poverty schools did so.

THE RESULTS:

Common sense and a growing body of academic research agree: you can't teach what you don't know. Student achievement indeed suffers when they are taught by individuals who lack a firm foundation in their subject area and strong teaching skills.

Professor William Sanders of the University of Tennessee has studied the impact of teacher qualifications on student achievement by analyzing 6 million standardized test profiles of over 885,000 public school students in Tennessee. In one analysis, he compares third graders who had poor teachers for three years with similar students who had good teachers for three years. Sanders found that, by sixth grade, the standardized test scores of these two groups of students could differ by as many as 50-percentile points, a gap he called astounding. Sanders summarized his own research and that of many others as follows: saying:

" What we've consistently found, starting back in the 80's, is that when compared to class size or the ethnicity of the student, or whether they are on free or reduced price lunch, all of these things pale in comparison to the effectiveness of the individual classroom teacher"

Professor Ronald F. Ferguson at Harvard, who has done a number of studies on the effects of teacher quality and qualifications on student achievement, finds that the effects of teacher qualifications on student test scores is so strong that the black-white test score gap is almost entirely accounted for by the differences in the qualifications of their teachers. Further, Dr. Ferguson finds that teacher qualifications are the single most important determinant of student test scores, having four times more impact on test scores than class size. Other researchers find similar effects. Indeed, a 1996 review of 60 studies of the impact of various investments on student test scores by Greenwlad, Hedges and Laine found that an increased investment in teacher education has the most powerful effect on student achievement, an impact 5 times more powerful than lowering teacher student ratios.

Organizations as different as the Heritage Foundation and the Education Trust are joined in a deep concern about the quality of America's teaching force, the quality of the programs that prepare them, and the inequities in the distribution of well qualified teachers. It is clearly time for federal action. But what should be done?

No matter how you look at it, the situation at the moment is a grim one. All around the country, school districts are struggling to get their students to new—and much higher—standards than ever before. High quality teachers are the most important ingredient in whether those efforts will succeed or fail. But most districts—especially those serving concentrations of low-income or minority children—don't have the high quality teachers they need.

Some states have already begun to tackle these problems, but most of their efforts have been piecemeal, their steps small. By taking bold action now, Congress can make sure that this problem gets the attention it deserves.

The most important leverage points are as follows:

- ***Raising the bar for entry into the profession.*** Congress should provide incentives for states to set higher standards for entry to the profession and to rigorously assess whether candidates meet those standards.

- ***Holding colleges and universities accountable for preparing future teachers to meet those standards.*** Institutions of higher education are far more likely to take seriously their obligation to prepare their graduates to meet these standards if they are held accountable for the performance of their graduates on state licensure exams. Congress can speed the process by withdrawing federal support from institutions whose graduates have high failure rates on these exams.

- ***Enforcing standards for entry into the profession.*** Congress can stiffen the resolve of state officials to actually enforce the standards they set by conditioning continued receipt of federal elementary and secondary dollars on state willingness to (1) restrict use of waivers to *real* emergencies; (2) assure that no child is taught by an unqualified teacher for more than one consecutive year; and (3) to assure that teachers teach only in the subjects in which they are prepared.

- ***Making parents partners in the education of their children.*** Congress should insist that schools receiving federal support notify parents when their children are being taught by underqualified teachers.

- ***Putting the needs of children in high poverty schools first.*** Congress needs to invest its limited dollars in the most pressing problem: preparing and supporting teachers in high poverty urban and rural schools. The most effective ways to do this are (1) focused university/school district partnerships to prepare and support high quality teachers for high poverty areas; and (2) generous incentives for high achieving undergraduates to prepare to teach in high poverty schools, in the form of substantial loan forgiveness for each year of service.

- ***Fair distribution of teacher quality.*** Congress should insist that states remedy existing imbalances in the quality of teachers in high-poverty and low-poverty schools. Both existing funds—particularly in programs like Title 1—and new funds should be conditioned on significant annual progress in equalizing teacher quality across the state.

APPENDIX K- MR. STEIDLER

ALEXIS
de TOCQUEVILLE
INSTITUTION

Statement of Paul F. Steidler
Director – Education Reform Project
Alexis de Tocqueville Institution
1611 North Kent Street, Suite 901
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SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES
COMMITTEE ON EDUCATION AND THE WORKFORCE
UNITED STATES HOUSE OF REPRESENTATIVES

TEACHER PREPARATION AND CLASSROOM SIZE REDUCTION

Tuesday, February 24, 1998
2175 Rayburn House Office Building
Washington, D.C.

Chairman Riggs, Congressman Martinez, and Members of the Subcommittee, thank you for the opportunity to testify today.

In many ways, it is quite perplexing that we have to discuss a "teacher shortage" and, relatedly, issues of teacher pay. Over the years, parents and other taxpayers have been exceedingly generous in what they are willing to spend for public education. On the whole, teachers have not been motivated to enter the profession for money and are genuinely concerned with children's welfare, factors which earn them significant respect.

I submit that a core problem we face today in K-12 education -- from both an economic and administrative standpoint -- is that there has been a significant increase in the number of blockages between teachers and parents in recent decades. Thus, solutions to the low-pay of teachers and a potential shortage must focus on empowering parents and empowering teachers.

In fact, to have the best possible schools for our children, we must meet a fundamental challenge: reengineer public schools so that deserving teachers are paid more, have better working conditions, and greater hegemony in the classroom. Simultaneously, administrative costs and bureaucracy need to be reduced -- significantly.

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Teachers, particularly hard-working and enthusiastic ones, will be the greatest beneficiaries of such change. Some, in fact, some could earn over $100,000 annually without an increase in taxes. The best way to accomplish these aims is through the expanded use of market principles and practices.

The degree to which our public education system has diminished its focus on teachers is both troubling and striking.

Since 1959, taking inflation into account, public education spending has more than tripled on a per pupil basis. By comparison, teacher pay has risen barely 40 percent during the same period. Thus, teachers' raises have been less than one-seventh of the raise that the system as a whole has received.

Today, barely half of the personnel in the public school system are teachers. In fact, for every three teachers added to the public school payroll since 1959, four non-teachers have been added. These and related findings are more extensively discussed in a forthcoming study the Tocqueville Institution has worked on in conjunction with the Milton & Rose D. Friedman Foundation.

The above trends have occurred at a time when the teacher unions – the American Federation of Teachers and the National Education Association – have come to represent the vast majority of public school teachers and risen as political forces in the country.

Thus, unions' use of monolithic contracts has restricted opportunities for teachers and driven many high-caliber individuals from the profession. Today, public school teachers are nearly always paid based simply on their years of service and education attained. It doesn't matter what subject is taught. It doesn't matter if a teacher comes in a mere 15 minutes before classes starts or spends two extra hours each day working with students. In fact, it doesn't even matter how large the class size is.

It is easy to see how many of our best and brightest teachers can become demoralized under such a compensation and professional structure. Furthermore, the unions' opposition to merit pay and vigorous defense of tenure adds insult to injury for many of these teachers.

There are a number of encouraging developments outside the Beltway indicating how teachers and students will benefit from "reengineering." Teachers have found significant employment opportunities and satisfaction in more than 700 charter schools that have been opened across the country, largely free of union rules and other administrative burdens.

Low-income scholarship or voucher programs have also served as the catalyst for changes in public schools. For example, John Gardner, a school board member in Milwaukee, has noted that the city's voucher program "puts effective pressure on the Milwaukee Public Schools to expand, accelerate and improve reforms long deliberated and too-long postponed."

Expanding opportunities for charter schools and voucher programs are two steps that Congress can take to help facilitate more innovative and deserving pay packages for teachers.

In addition, the planned merger of the NEA and the AFT should be scrutinized. This recently announced marriage will create a de facto teacher union monopoly in the United States. It is hard to see how the megaunion will be more responsive to teachers' needs and open to more flexible contract arrangements.

As the National Education Association is chartered by Congress, and as the merger will directly impact all public school teachers in the U.S., there is compelling need for such scrutiny.

Finally, Congress should examine and have quantified the cost of federal and state mandates and regulations on education. The array of these mandates affecting schools appears to be significant and merits further study and investigation.

As my colleague Gregory Fossedal has noted, "The gap between what the U.S. spends on nonteaching staff and what is spent by such countries as Japan, Austria and Finland amounts to 7% to 10% of our education spending. If only one-third of this gap is due to the regulation-mandate burden, then the net impact is 2.3% to 3.3% of America's education budget – or somewhere between $11 billion and $15 billion annually."

Each of these four actions – expansion of charter schools, expansion of voucher programs, scrutiny of union activity, and identification and reduction of the cost of education regulations and mandates, have benefits in their own right and will help reengineer our public schools.

In closing, let me add that however well intentioned, I do not believe that the President's proposal to provide $12 billion over the next seven years to help school districts hire 100,000 teachers will address the root causes of teacher compensation problems. In fact, it may mitigate some of the mounting pressure for public school reenginering, and in this sense do more harm than good.

I thank the Subcommittee for your time and attention and look forward to your questions.

The views expressed in this testimony are those of Mr. Steidler and not necessarily those of the Alexis de Tocqueville Institution or its Board of Directors.

Committee on Education and the Workforce

Witness Disclosure Requirement – "Truth in Testimony"
Required by House Rule XI. Clause 2(g)

Your Name:

1. Are you testifying on behalf of a Federal. State. or Local Governmental entity? Yes [✓ No]

2. Are you testifying on behalf of an entity other than a Government entity? [✓ Yes] No

3. Please list any federal grants or contracts (including subgrants or subcontracts) which you have received since October 1, 1994:

— None —

4. Other than yourself, please list what entity or entities you are representing: Alexis de Tocqueville Institution
1611 North Kent Street, Suite 901
Arlington, VA 22209

5. If your answer to question number 2 is yes, please list any offices or elected positions held or briefly describe your representational capacity with the entities disclosed in question number 4:

Director - Education Reform Project

6. If your answer to question number 2 is yes, do any of the entities disclosed in question number 4 have parent organizations. subsidiaries. or partnerships to the entities for whom you are not representing? Yes [✓ No]

7. If the answer to question number 2 is yes, please list any federal grants or contracts (including subgrants or subcontracts) which were received by the entities listed under question 4 since October 1, 1994, including the source and amount of each grant or contract:

The Tocqueville Institution's Latin America program has received $9,906 from the Center for International Private Enterprise (CIPE) in fulfillment of a research contract. CIPE, an affiliate of the U.S. Chamber of Commerce, is a core grantee of the National Endowment for Democracy, a private nonprofit organization that receives appropriated funds annually through a U.S. Information Agency grant.

Signature: Paul F. Steidler Date: 2/20/98

Please attach this sheet to your written testimony.

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PERSONAL INFORMATION: **Please provide the committee with a copy of your resume (or a curriculum vitae) or just answer the following questions:**

a. Please list any employment, occupation, or work related experiences, and education or training which relate to your qualifications to testify on or knowledge of the subject matter of the hearing:

Paul F. Steidler directs the Alexis de Tocqueville Institution's Education Reform Project, which works to empower teachers and parents. He has prepared a number of studies and articles about school choice, the nature and focus of federal education programs, and the teacher unions.

Mr. Steidler is currently preparing a study about how school choice programs will impact public and private school teachers in the U.S. He has also worked on projects examining how teachers and teacher unions in other countries regard school choice programs and why the agenda of the teachers' unions is after at cross-purposes with its membership.

Mr. Steidler's articles and commentary on education issues have appeared in such publications as *The Washington Post*, *The Wall Street Journal*, *The Chicago Tribune*, *The Christian Science Monitor*, *Education Week* and *Education Daily*.

b. Please provide any other information you wish to convey to the Committee which might aid the members of the Committee to understand better the context of your testimony:

The Alexis de Tocqueville Institution was established in 1986 to study, promote and extend the principles of classical liberalism: political equality, civil liberty, and economic freedom.

Please attach to your written testimony.

APPENDIX L- MR. BERRY

Statement of Barnett Berry
Associate Director, Policy & State Relations

National Commission on Teaching & America's Future

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Subcommittee on Early Childhood, Youth, and Families
Committee on Education and the Workforce
United States House of Repressentatives

Teacher Preparation and Classroom Size Reduction
Tuesday, February 24, 1998
2715 Rayburn House Office Building
Washington, DC

My name is Barnett Berry, and I am here today as associate director of the National Commission on Teaching & America's Future. The Commission, a bipartisan blue-ribbon panel of 26 policy makers (Republican and Democratic governors, legislators, and chief state school officers), business and community leaders, and educators, issued a major report in 1996 (*What Matters Most: Teaching for America's Future*) documenting the importance of teaching quality and teachers' expertise for educational quality and equality. This past fall, a second report (*Doing What Matters Most: Investing in Quality Teaching*) augmented these data. Among the several hundred studies reviewed by the Commission in developing its recommendations, the most salient findings for today's hearing are the following are:

(1) One of the most important influences on student achievement is teachers' expertise, followed by a smaller influence of small classes and schools, especially in the early grades.

(2) One of the greatest sources of inequality in educational outcomes is the unequal distribution of well-qualified teachers.

(3) The nature and quality of teacher education strongly affect teaching quality and student learning.

These analyses would suggest that, in the context of the current legislative deliberations, any effort to reduce class size should allocate funds only for the hiring of well-qualified teachers those with full certification and, preferably, a major in their field), and that any such effort to decrease the size of classes should be accompanied by an equally strong effort to improve the overall quality of teacher preparation and the distribution of well trained teachers to those students who currently have the least access to good teachers. Among the many educational reforms that could be undertaken, these will have the greatest bearing in the long run on the overall quality of American education.

In the next few minutes, I will briefly outline these findings which are explicated in further detail in the Commission's reports and the studies cited in their extensive lists of references.

Teacher expertise is one of the most important determinants of student achievement

Among the research the Commission reviewed are a number of recent studies that have used more sophisticated measures and methods than many older studies that looked at influences on student achievement. These bodies of research find fairly consistently that certain things matter for student achievement: All else equal, students do better in smaller schools and school units where they are well known by a smaller total number of adults over a longer period of time; students do better in smaller classes, below a threshhold of about 18, especially in the early elementary years and especially if the students are more at risk of poor school achievement; students do better when they have access to high quality curriculum that is engaging and academically challenging; and students do better when they are taught by well-qualified teachers. The last two of these conditions are interrelated, because it takes well-prepared teachers to teach challenging curriculum, especially if they are teaching heterogeneous groups of learners who need very skillful teaching.

Recent studies suggest that the most important of all of these conditions is the presence of highly expert teachers. For example, a large-scale study of school districts in Texas by Harvard economist Ronald Ferguson found that teachers' expertise, as measured by scores on a licensing examination, master's degrees, and experience, accounted for more of the difference in students' reading and mathematics achievement (about 40%) than any other single factor. Small schools and lower class sizes also contributed to student achievement in the elementary grades but had a much smaller effect. (See figure 1.) Not only did teacher qualifications make an enormous difference in student outcomes, but the differentials in the quality of teachers available to black and white students in the state accounted for almost all of the difference in the test scores of these two groups of students. Ferguson and a colleague replicated this study in Alabama with very similar results. Studies by other researchers in New York City, Tennessee and Dallas, Texas also found that differences in teacher quality were the major determinants of student achievement, and that minority and white students had extremely unequal access to highly effective teachers.

In the course of the Commission's research, we noticed two other important tendencies. First, the performance of students in the Third International Math and Science Studies (TIMSS) seems closely associated with the distribution of teacher expertise. The fields and grade levels at which U.S. teachers are relatively better qualified are those where U.S. students perform better relative to students in other countries. For example, the greatest numbers of unqualified teachers in the U.S. -- those teaching without certification or even a minor in their field -- are at the high school level in fields like mathematics and physical science, where U.S. students do least well. In 1994, only 54% of U.S. secondary math teachers had both a license and a major in their field. Perhaps not surprisingly, U.S. 8th graders ranked18th out of 25 countries that met the TIMSS guidelines. While U.S. students did better in general science (12th out of 25 countries), and general science teachers are relatively better-qualified (only 18% are teaching out-of-field), more than half of physical science teachers in this country are teaching out-of-field, and U.S. 8th graders ranked 17th in physics.

We also noticed in the course of our research that the states that have consistently performed best on the National Assessment of Educational Progress in mathematics and reading are also consistently those with the best prepared teachers; they have the highest standards for teachers -- requiring both extensive teacher education and a major in the field to be taught -- and they enforce them most strenuously, hiring virtually no teachers who are not fully trained and certified. When we tested this observation using multiple regression analyses, we found that indeed a state's percentage of well-qualified teachers (that is the percentage who are fully certified and hold a major in their field) is by far the strongest predictor of student achievement — far exceeding the influence of all other variables, including student background characteristics like poverty, minority status, and limited English proficiency, as well as the influence of such variables as class size. (see attachment)

A summary of 60 studies of school influences on student achievement underscored these findings with an analysis showing that the single most productive investment for schools in terms of increasing student achievement is to increase spending on teacher education. (See Figure 2.) Note here, again the much smaller influence on student achievement of lowering pupil-teacher ratios. While potentially useful, this kind of investment is only a small part of the story for increasing student learning. To make a difference, teachers must have the training and expertise to use smaller class sizes to good advantage in individualizing instruction. Otherwise, the investment makes little difference.

And, as California recently found in its class size reduction initative, lowering class sizes by hiring large numbers of unqualified teachers is a devil's bargain. In the last year, in part as a result of rapid class size reduction, California has hired well over 20,000 teachers on emergency certificates. Many parents who are deeply unhappy with this outcome have made it clear that they would much rather their children be taught in slightly larger classes in adequate classrooms by well-prepared teachers than in smaller groups

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taught by untrained teachers struggling to figure out how to teach, and doing so in closets or cafeterias (this last factor a result of decreasing class size without the wherewithal to expand facilities to accommodate the greater number of classes). This only exacerbates the kind of problems that led to a lawsuit against the Los Angeles Unified School District a few years ago because nearly all of the newly hired uncertified teachers were being placed in schools with the heaviest concentrations of African American and Latino students. Clearly a careful approach to policy that takes teacher quality seriously is warranted.

The unequal distribution of qualified teachers is the greatest source of educational inequality.

While every parent understands what research seems to confirm -- that teacher expertise makes an enormous difference in what students learn -- a shocking number of entrants to teaching are being hired without meeting basic requirements, and the vast majority of them are assigned to teach low-income and minority students in central cities and poor rural schools.

Four times (4X) as many of these uncertified teachers are hired into low-income and high-minority schools as are hired into schools serving more affluent students (see figure 3). Thus, the students who most need the most highly skilled teachers are least likely to get teachers who have up-to-date knowledge about their subject areas and about how children develop and learn and what to do when they are having difficulty. Although some teachers are now better trained than ever before due to recent reforms in teacher education, others are entering schools with no training at all.

While no state will allow a person to write wills, treat patients, fix plumbing, or style hair without having completed training and passed an examination, more than 30 states will allow a person to teach children without having met any of these requirements.

In 1994, more than 25% of newly hired teachers did not meet state certification requirements, a number that is growing because of serious maldistribution in the supply of teachers across this country, great inequalities in districts' capacity to recruit and pay for well-prepared teachers, and increasing demand for teachers at a time when the federal and state subsidies that once aided teacher recruitment no longer exist.
(Although the nation produces many more teachers than it hires each year, they are not always located where they are needed; hence, some states and districts have huge surpluses while others have serious undersupplies. In medicine, the federal government deals with these problems by subsidizing the preparation of physicians who prepare in shortage fields and who pledge to work in high-need locations).

Importantly, when poor students and students of color do get access to well-prepared teachers, they do quite well. In fact, a study of high- and low-achieving schools with similar, very diverse student populations in New York City found that differences in teacher qualificiations accounted for roughly 90% of the differences in student achievement in reading and mathematics at all grade levels tested.

Teacher Education Matters.

Finally, we found that teacher education matters for both teacher performance and student learning. The Commission reviewed more than two hundred studies that contradict the long-standing myths that "anyone can teach" and that "teachers are born and not made." This research makes it clear that teachers need to know their subject matter well, but they also need to know more, including how students learn and how to use varied teaching strategies to address learning differences and difficulties.

These include studies that found that students of fully certified math teachers show significantly larger learning gains than those of uncertified math teachers (e.g., see Hawk. Coble, and Swanson, 1985) and that students of teachers who have had more preparation in mathematics and education courses, including mathematics methods courses, have higher achievement (e.g., see Begle. 1979); studies that show that students of fully certified elementary teachers and those with more coursework in how to teach reading have higher achievement levels (e.g., see NAEP, 1997); and a review of 65 studies that found that students achieve at higher levels when their teachers have had more training in science and science education (e.g., see Druva and Anderson, 1983).

Not only does teacher education matter, but more teacher education appears to be better than less -- particularly when it includes carefully planned clinical experiences that are interwoven with coursework on learning and teaching. Recent studies of redesigned teacher education programs -- those that offer a five-year program including an extended internship -- find their graduates are more successful and more likely to enter and remain in teaching than graduates of traditional undergraduate programs.

While teacher education is still woefully uneven in this country, there is a growing movement to improve teacher preparation. Due to recent teacher education reforms, about 25% of new teachers are graduating from 5 year programs of preparation of the kind that appear to have significantly better outcomes for entry, retention, teacher performance, and student achievement.

Most of these teachers are hired into the most advantaged school districts, however. so there is a long way to go ensure that most students are taught by very well-prepared teachers. By contrast, many of the nations we might consider peers or competitors fund education centrally and equally so that all districts can hire well-qualified teachers, and they prepare teachers more extensively before they enter teaching (some require 2 or 3 years of graduate level training in education on top of a disciplinary bachelor's degree), as well as providing more ongoing training on the job. This is made possible because these other countries invest their resources in many more teachers -- typically 60 to 80% of staff as compared to only about 43% in the U.S.

In this statistic lies the other rub for reducing class sizes. U.S. schools need to reorganize their efforts so that a great share of their resources goes to support classroom teachers. In fact, there is today in U.S. school systems, 1 adult for every 9 children; 1 professional staff person for every 13 children; 1 teacher for every 18 children; but class sizes average 25 and may reach 35 or higher in some cities. The Commission's report also shows how reallocations of staff and personnel in redesigned schools can result in noticeably smaller classes and time for teachers to work with and learn from one another.

The critical issue for American education at a time when we need to prepare a much more diverse student population to much higher educational standards than ever before in our history is that we really do not have a coherent system to ensure that students get access to teachers who are well prepared to ensure that they learn. While lowering class size might be modestly helpful, the single most important strategy for improving student achievement is to create a system that ensures the way that teachers are recruited, prepared, licensed, selected, supported, assessed, and rewarded.

This will be the only way that in our lifetime we will realize the audacious goal of the National Commission on Teaching & America's Future: providing a caring and competent teacher for every child. Legislative initiatives that increase the supply of well-prepared teachers and provide incentives for them to work where they are most needed are likely to make the most difference for America's future.

> Note: The National Commission on Teaching and America's Future was launched in 1994 with funding from the Rockefeller Foundation and Carnegie Corporation of New York. The Commission proposed an interlocking set of 20 recommendations that include strategies for creating more rigorous standards for students and teachers; redesigning teacher education and overhauling professional development; creating recruitment incentives and ensuring qualified teachers in every classroom; encouraging rewards for teacher knowledge and skill; and redesigning schools so that they support teaching and learning. Eighteen months after the release of its initial report, the Commission is working toward these recommendations with 12 state partners led by Democratic and Republican governors and a network of urban school districts. In 1997, more than 20 states passed legislation reflecting one or more of the Commission's recommendations.

All studies cited in this report can be found in:

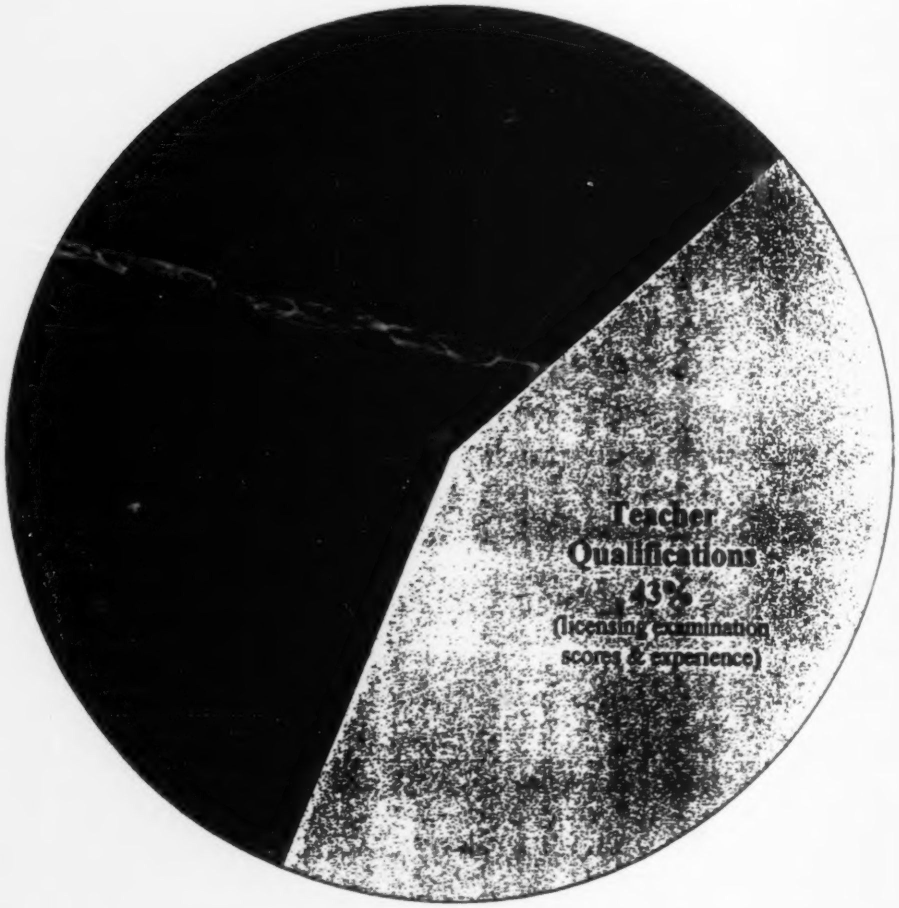
What Matters Most: Teaching for America's Future (1996). New York: National Commission on Teaching & America's Future.

Doing What Matters Most: Investing in Quality Teaching (1997). New York: National Commission on Teaching & America's Future.

Figure 1

Influence of Teacher Qualifications on Student Achievement

Proportion of Measured Variance in Math Test Score Gains (from Grades 3 to 5) Explained By:



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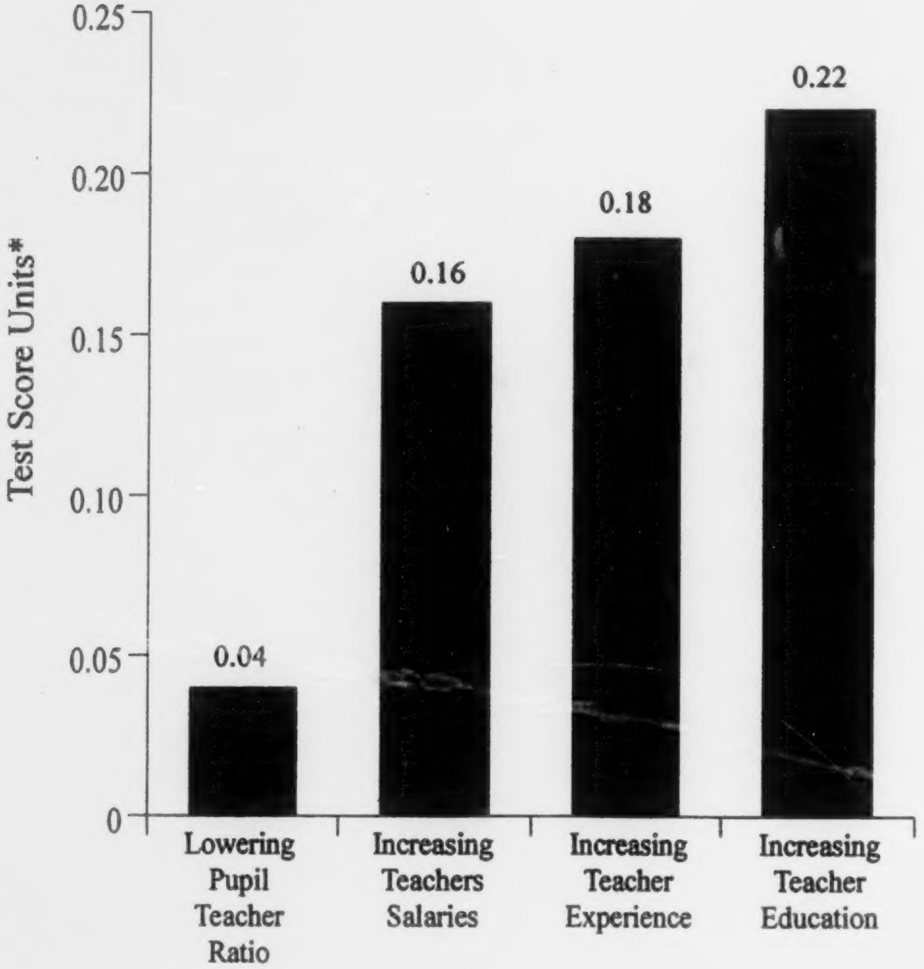
Developed from data presented in Ronald F. Ferguson, "Paying for Public Education: New Evidence of How and Why Money Matters," *Harvard Journal on Legislation* 28 (Summer 1991): 465-98.

Figure 2
Effects of Educational Investments
Size of Increase in Student Achievement for Every $500 Spent on:

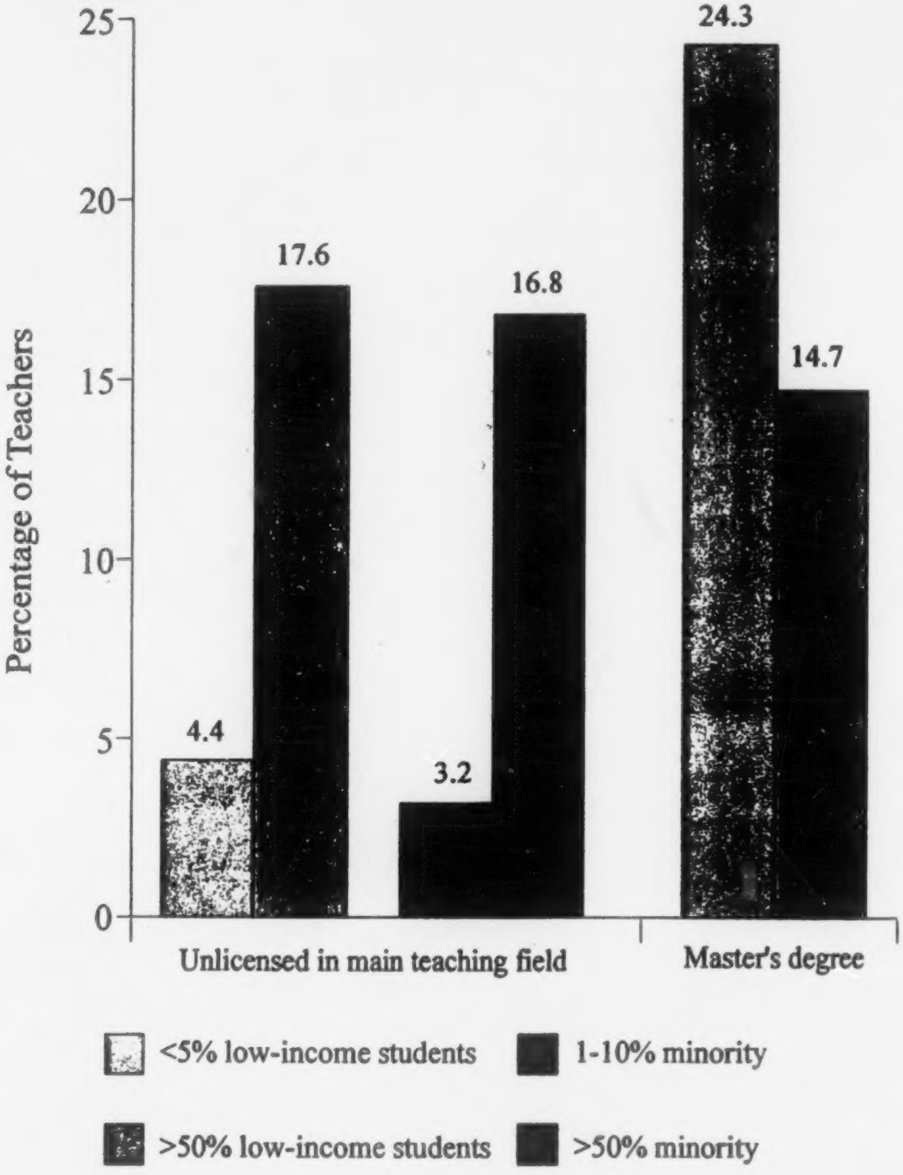


*Achievement gains were calculated as standard deviation units on a range of achievement tests used in the 60 studies reviewed.

Source: Rob Greenwald, Larry V. Hedges, & Richard D. Laine (1996). The Effect of School Resources on Student Achievement. Review of Educational Research 66(3), pp. 361-396.

Figure 3
Qualifications of Newly Hired Teachers*, by School Type, 1994

(Percentage of Teachers)



*Newly hired teachers excluding transfers
Source: Schools and Staffing Surveys, 1993-94. Tabulations conducted by the National Commission on Teaching and America's Future.

Influences of State Level Student Achievement
(National Assessment of Educational Progress)

Results of Multiple Regression Analyses

*p<.05 **p<.01

VARIABLES/ BETA COEFFICIENTS (T values)	Math 4 1992	Math 4 1996	Math 8 1990	Math 8 1996	Reading 4 1992	Reading 4 1994
% of well qualified teachers	.786 (3.3)**	.747 (2.47)*	.623 (2.71)*	.621 (2.47)*	.824 (4.78)**	.636 (3.36)**
% of teachers with master's degrees		.101 (.60)			.053 (.481)	.103 (.86)
% of districts enforce hiring standards	.100 (.67)	.259 (1.37)				
% of unqualified new hires			-.156 (-.92)	-.132 (-.71)	-.092 (-.63)	-.199 (-1.2)
% of teachers with access to professional development			.125 (.96)	.261 (1.85)		
Student poverty status	-.342 (-2.12)	-.321 (-1.53)	-.084 (-.52)	-.074 (-.42)	-.080 (-.61)	-.166 (-1.14)
Student LEP status	.264 (1.79)	.283 (1.46)			-.015 (-.11)	-.058 (-.41)
Student minority status	.006 (.026)	.058 (.182)	-.171 (-.74)	-.177 (-.71)		
Class size	-.064 (-.53)		-.148 (-1.28)	-.141 (-1.11)	-.111 (-1.13)	-.091 (-.83)
Multiple r	.90	.84	.91	.89	.93	.92
r square	.82	.70	.83	.79	.87	.84

Definitions:
% of well qualified teachers: teachers with full state certification and a major in their field
% of districts enforce hiring standards: require full state certification as condition of hiring
% of unqualified new hires: new hires without full state certification in main assignment field
% of teachers with access to professional development: teachers receiving >8 hours of professional development last year
Student poverty status: % of students with family incomes below poverty line
Student LEP status: % of students who are limited English proficient
Student minority status: % of students who are minority
Data sources: NCES, SASS

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B. Berry (1996). "Accountability, School Reform, and Equity: The Case of a Troubling School District." Urban Review, 28 (3), pp. 233-256.

R. Ishler, K. Edens, and B. Berry (1996). "Teacher Education Curriculum: Elementary Education In J. Sikula, T. Buttery, and E. Guyton (eds.). Handbook of Research on Teacher Education. New York: MacMillan.

B. Berry (1995). Keeping Talented Teaching: Lessons from the North Carolina Teaching Fellows. Commissioned by The Public School Forum of North Carolina, Raleigh, NC. 65 pp.

Dr. Berry is author of more than 70 book chapters, journal articles, and commissioned reports. He is a consultant to a wide range of think tanks, foundations, and community groups committed to improving teaching and learning in America.

Committee on Education and the Workforce

Witness Disclosure Requirement – "Truth in Testimony"
Required by House Rule XI. Clause 2(g)

Your Name: BARNETT BERRY		
1. Are you testifying on behalf of a Federal, State, or Local Governmental entity?	Yes	No X
2. Are you testifying on behalf of an entity other than a Government entity?	Yes X	No
3. Please list any federal grants or contracts (including subgrants or subcontracts) which you have received since October 1, 1994:		
4. Other than yourself, please list what entity or entities you are representing: NATIONAL COMMISSION ON TEACHING & AMERICA'S FUTURE		
5. If your answer to question number 2 is yes, please list any offices or elected positions held or briefly describe your representational capacity with the entities disclosed in question number 4:		
6. If your answer to question number 2 is yes, do any of the entities disclosed in question number 4 have parent organizations, subsidiaries, or partnerships to the entities for whom you are not representing?	~~Yes~~	No X
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Signature: _______________ Date: 2/23/98

Please attach this sheet to your written testimony.

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APPENDIX M- Report of the National Commission on Teaching & America's Future- "What Matters Most: Teaching for America's Future"

What Matters Most:
Teaching for America's Future

Report of the National Commission on
Teaching & America's Future

September 1996

Dedication

This report is dedicated to
America's teachers:
past, present, and future.

The National Commission on Teaching & America's Future

The work of the National Commission on Teaching & America's Future, formed in 1994, has been funded by the Rockefeller Foundation and Carnegie Corporation of New York. The mission of the Commission is to provide an action agenda for meeting America's educational challenges, connecting the quest for higher student achievement with the need for teachers who are knowledgeable, skillful, and committed to meeting the needs of all students. The Commission is dedicated to helping develop policies and practices aimed at ensuring powerful teaching and learning in all communities as America's schools and children enter the 21st century.

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Copies of the report *What Matters Most: Teaching for America's Future* are available from:
The National Commission on Teaching & America's Future
P. O. Box 5239
Woodbridge, Virginia 22194-5239

Prices (shipping and handling included):

Full report	$18.00
Summary report	$5.00
Discounted price for both reports	$20.00
Video and discussion guide	$15.00

Complete package:
Full report, Summary report,
video and discussion guide
$30.00

Orders must be prepaid by check or money order. For information on bulk rates please call: (212) 678-3015.

For further information about the National Commission on Teaching & America's Future, see its World Wide Web site at: http://www.tc.columbia.edu/~teachcomm or contact:

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What Matters Most:

Teaching for America's Future

Report of the National Commission on
Teaching & America's Future

September 1996

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Acknowledgments

The Commission wishes to express its gratitude to the many individuals and organizations who have helped make this report possible. We are grateful to those who have advised us in our work: the presenters who have shared so much of their knowledge; the advisory groups that have come together to offer support and advice; the focus groups of parents and teachers who shared their valuable insights with us; and the many who gave us feedback at Commission forums. We list their names in Appendices B (Commission Presentations), C (Commission Advisers), D (Research Contributors), and E (Commissioned Papers).

None of this work would have been possible without the vision and guidance of our funders, the Rockefeller Foundation and Carnegie Corporation of New York. They have also extended to us a commitment and generosity that goes well beyond the financial support. We especially want to thank Marla Ucelli and Jamie Beck Jensen of the Rockefeller Foundation, and Vivien Stewart and Karin Egan of Carnegie Corporation of New York, whose support and advice were always invaluable.

We can hardly begin to acknowledge the invaluable contributions of Karen Garr, Teacher Adviser to Governor James B. Hunt, North Carolina; Mindy Sick, Assistant to Governor Jim Edgar for Elementary and Secondary Education, Illinois; Mary-Dean Barringer, Vice President, Programs for the Advancement of Teaching, National Board for Professional Teaching Standards; Shari Francis, Director of State Relations, National Council for Accreditation of Teacher Education; Eugenia Kemble, Assistant to the President for Educational Issues, American Federation of Teachers; David Squires, Education Consultant, School Development Program, Yale University; and Chuck Williams, Director, Teacher Education, Center for Teaching and Learning, National Education Association.

Several people have also helped in various stages of assembling data and writing this report—Barnett Berry, James Harvey, Gary Sykes, Anne C. Lewis, Richard M. Ingersoll, David Monk, Tom Corcoran, Eileen Sclan—and we thank them for their valuable assistance.

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Preface

As you read this report, I hope you will listen to the teachers, the parents, and the children—the real people behind the studies and the numbers we present here. We did, and we were guided by what we heard.

One voice that made a tremendous impact on us was that of Evelyn Jenkins Gunn, an English teacher from Pelham, New York, who explained her passion for teaching—not why she teaches, but why she is *compelled* to teach:

> I was supposed to be a welfare statistic. . . . It is because of a teacher that I sit at this table. I remember her telling us one cold, miserable day that she could not make our clothing better; she could not provide us with food; she could not change the terrible segregated conditions under which we lived. She *could* introduce us to the world of reading, the world of books, and that is what she did.
>
> What a world! I visited Asia and Africa. I saw magnificent sunsets; I tasted exotic foods; I fell in love and danced in wonderful halls. I ran away with escaped slaves and stood beside a teenage martyred saint. I visited lakes and streams and composed lines of verse. I knew then that I wanted to help children do the same things. I wanted to weave magic. . . .

As Evelyn Jenkins Gunn understands, good teachers literally save lives. However they do it—by loving students, helping them imagine the future, and insisting that they meet high expectations and standards—the best of them are magic weavers. Many of us can remember such a teacher—one who changed our lives, so gifted that he or she transported us out of our own time and place and circumstances and jump-started the dreams and possibilities that lie within us all.

In the end, supporting the Evelyn Jenkins Gunns of this world—and, through them, all of their students—is what this Commission on Teaching & America's Future is about.

I believe the conclusions and recommendations of this report speak for themselves. Standards for students and teachers are the key to reforming American education. Access to competent teaching must become a new student right. Access to high-quality preparation, induction, and professional development must become a new teacher right. The reform movement of the last decade cannot succeed unless it attends to the improvement of teaching. If we pay attention to supporting knowledgeable teachers who work in productive schools, American education need suffer through no more dead-end reforms.

My colleagues on the Commission have been candid with each other in our discussions, and they have thought hard about what needs to be done. We hope this document launches a great debate about the critical link between improving the capacities of teachers and the future of the United States. Although each of us has distinctive ideas about what needs to be done, we are unanimous in supporting the recommendations of this report.

Finally we appreciate the hard-working staff that facilitated and supported the process of our work. Executive Director Linda Darling-Hammond's vision, expertise, and unquenchable energy provided us with a vision of the future that could be. We have been ably assisted by Associate Director Velma L. Cobb; Communications Director E. Jane Beckwith; Administrative Associate Margaret Garigan; Research Associates Marcella L. Bullmaster, Ellalinda Rustique-Forrester, and Vezuvira Kavemuii Murangi; and Senior Policy Adviser David Haselkorn. The staff, like my colleagues on the Commission, never lost sight of the fact that America's future depends on finding the best teachers, helping them develop their skills to the greatest extent, and rewarding them for their work on behalf of children and youth.

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Governor, State of North Carolina

The National Commission on Teaching & America's Future

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Executive Summary

This report offers what we believe is the single most important strategy for achieving America's educational goals: A blueprint for recruiting, preparing, and supporting excellent teachers in all of America's schools. The plan is aimed at ensuring that all communities have teachers with the knowledge and skills they need to teach so that all children can learn, and all school systems are organized to support teachers in this work. A caring, competent, and qualified teacher for every child is the most important ingredient in education reform.

The Commission's proposals are systemic in scope—not a recipe for more short-lived pilots and demonstration projects. They require a dramatic departure from the status quo—one that creates a new infrastructure for professional learning and an accountability system that ensures attention to standards for educators as well as students at every level—national, state, local school district, school, and classroom.

This Commission starts from three simple premises:

1. *What teachers know and can do is the most important influence on what students learn.*
2. *Recruiting, preparing, and retaining good teachers is the central strategy for improving our schools.*
3. *School reform cannot succeed unless it focuses on creating the conditions in which teachers can teach, and teach well.*

We propose an audacious goal for America's future. Within a decade—by the year 2006—we will provide every student in America with what should be his or her educational birthright: access to competent, caring, qualified teaching in schools organized for success. This is a challenging goal to put before the nation and its educational leaders. But if the goal is challenging and requires unprecedented effort, it does not require unprecedented new theory. Common sense suffices: America's students are entitled to teachers who know their subjects, understand their students and what they need, and have developed the skills required to make learning come alive.

However, based on its two-year study, the Commission identified a number of barriers to achieving this goal. They include:

- Low expectations for student performance.
- Unenforced standards for teachers.
- Major flaws in teacher preparation.
- Painfully slipshod teacher recruitment.

- Inadequate induction for beginning teachers.
- Lack of professional development and rewards for knowledge and skill.
- Schools that are structured for failure rather than success.

We offer five major recommendations to address these concerns and accomplish our goal.

I. Get serious about standards, for both students and teachers.

- Establish professional standards boards in every state.
- Insist on accreditation for all schools of education.
- Close inadequate schools of education.
- License teachers based on demonstrated performance, including tests of subject matter knowledge, teaching knowledge, and teaching skill.
- Use National Board standards as the benchmark for accomplished teaching.

II. Reinvent teacher preparation and professional development.

- Organize teacher education and professional development programs around standards for students and teachers.
- Develop extended, graduate-level teacher-preparation programs that provide a yearlong internship in a professional development school.
- Create and fund mentoring programs for beginning teachers, along with evaluation of teaching skills.
- Create stable, high-quality sources of professional development.

III. Fix teacher recruitment and put qualified teachers in every classroom.

- Increase the ability of low-wealth districts to pay for qualified teachers, and insist that districts hire only qualified teachers.
- Redesign and streamline district hiring.
- Eliminate barriers to teacher mobility.
- Aggressively recruit high-need teachers and provide incentives for teaching in shortage areas.
- Develop high-quality pathways to teaching for a wide range of recruits.

IV. Encourage and reward teacher knowledge and skill.

- Develop a career continuum for teaching linked to assessments and compensation systems that reward knowledge and skill.
- Remove incompetent teachers.
- Set goals and enact incentives for National Board Certification in every state and district. Aim to certify 105,000 teachers in this decade, one for every school in the United States.

V. Create schools that are organized for student and teacher success.

- Flatten hierarchies and reallocate resources to send more dollars to the front lines of schools: Invest more in teachers and technology and less in nonteaching personnel.
- Provide venture capital in the form of challenge grants to schools for teacher learning linked to school improvement and rewards for team efforts that lead to improved practice and greater learning.
- Select, prepare, and retain principals who understand teaching and learning and who can lead high-performing schools.

Developing recommendations is easy. Implementing them is hard work. The first step is to recognize that these ideas must be pursued together—as an entire tapestry that is tightly interwoven. Pulling on a single thread will create a tangle rather than tangible progress. The second step is to build upon the substantial work that has been undertaken over the past decade. All across the country, successful programs for recruiting, educating, and mentoring new teachers have sprung up. Professional networks and teacher academies have been launched; many education school programs have been redesigned; higher standards for licensing teachers and accrediting education schools have been developed; and a National Board for Professional Teaching Standards is now fully established and beginning to define and reward accomplished teaching. All these endeavors, and those of many others, form the foundation of this crusade.

What Matters Most: Teaching for America's Future

> *When my daughter starts school, I'm hoping for a teacher who is spontaneous, someone who can follow a curriculum and yet meet the emotional and social needs of children as well. I hope for someone who has a vivid imagination and knows how to use ordinary objects to teach valuable lessons. I want my daughter to be exposed to as many cultures and ethnic groups as possible, and I want her to be academically motivated and challenged. That will take a teacher who is sensitive to the individual needs of each student. If my daughter is slow, I want a teacher who is immediately looking into that, and if she's surpassing the class, I want her to get what she needs and progress as far as she can. I want a teacher who has conflict resolution skills, who creates discipline, but not from his or her emotions. I want a teacher who uses different methods and different ways of reaching students—who can think in innovative ways and challenge the children while teaching them academically.*
>
> *— Laurine Carson, a mother in Newark, New Jersey*

Every year on the first day of school, parents and students await the assignment of new teachers with a mixture of eagerness and anxiety. Parents with clout often lobby to get their students into certain classes, knowing that their children's learning will depend on the quality of the curriculum and teaching they are exposed to that year. Those with means either move to affluent communities or turn to private schools in the hope of finding better teaching. Families unable to do either, but who live within reach of a "magnet" school, sometimes camp out overnight to get their students registered with some of the best teachers in the district who are working in schools that are organized to support their efforts.

These parents spend tremendous energy in search of good teaching because they know what a difference it will make to their children's future. Most of them can remember at least one outstanding teacher who made a difference in their own lives. Policymakers are just beginning to grasp what parents have always known: that teaching is the most important element of successful learning. Teaching quality will make the critical difference not only to the futures of individual children but to America's future as well.

The need for excellent teaching grows ever more pressing. On March 26, 1996, the nation's governors and President Clinton joined business leaders and

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educators in a National Education Summit to reaffirm their commitment to achieving higher academic standards for America's schools and students. The governors pledged to develop internationally competitive academic standards and assessments in each state within the next two years and to reallocate funds to provide the professional development, infrastructure, and new technologies needed to meet these goals. Business leaders announced their commitment to support employees' involvement in their children's education, to require evidence of academic achievement for hiring, and to make states' education standards a key factor in business location decisions. All the participants pledged to roll up their sleeves and get down to work immediately to respond to the urgent need for schools to improve so that all graduates have higher levels of skills and knowledge. Nevada Governor Bob Miller expressed the shared view: "We owe it to our children to put higher academic standards in place. If we don't, we're robbing them of their future."

The most important contribution we as educators can make to the well-being of children is to enable them to deal effectively with their universe. . . . This is not, of course, a trivial task. It combines a number of concerns, ranging from teaching basic skills to readying students for the marketplace. In essence, it combines giving them the tools to analyze a situation to make an appropriate response, the self-confidence to use those tools, and the pride and motivation to use them with excellence.

— JOHN SNYDER, COMPUTER SCIENCE TEACHER,
ADVANCED TECHNOLOGIES ACADEMY
IN LAS VEGAS, NEVADA

This sense of urgency is well founded. There has been no previous time in history when the success, indeed the survival, of nations and people has been so tightly tied to their ability to learn.[1] Today's society has little room for those who cannot read, write, and compute proficiently; find and use resources; frame and solve problems; and continually learn new technologies, skills, and occupations. The economy of high-wage jobs for low-skilled workers is fast disappearing. In contrast to only 20 years ago, individuals who do not succeed in school have little chance of finding a job or contributing to society—and societies that do not succeed at education have little chance of success in a global economy.

Because of this, America's future depends now, as never before, on our ability to teach. If every citizen is to be prepared for a democratic society whose major product is knowledge, every teacher must know how to teach students in ways that help them reach high levels of intellectual and social competence. Every school must be organized to support powerful teaching and learning. Every school district must be able to find and keep good teachers. And every community must be focused on preparing students to become competent citizens and workers in a pluralistic, technological society.

This report offers what we believe is the single most important strategy for achieving America's educational goals: A blueprint for recruiting, preparing, and supporting excellent teachers in all of America's schools. This plan is aimed at ensuring that all communities have teachers with the knowledge and skills they need to teach so that all children can learn and that all school systems are organized to support teachers in this work. A caring, competent, and qualified teacher for every child is the most important ingredient in education reform and, we believe, the most frequently overlooked.

Furthermore, to be effective, such teachers must work in schools and school systems that are well designed to achieve their key academic mission and to support student learning. They must be focused on clear, high standards for students; organized to provide a coherent, high-quality curriculum across the grades; designed to support teachers' collective work and learning on behalf of their students; and structured to allow for ongoing parent engagement.

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We note that this challenge is accompanied by an equally great opportunity: Over the next decade we will recruit and hire more than two million teachers for America's schools. More than half the teachers who will be teaching ten years from now will be hired during the next decade. If we can focus our energies on preparing this generation of teachers with the kinds of knowledge and skills they need to succeed in helping students reach these goals, and on creating schools that use their talents well, we will have made an enormous contribution to America's future.

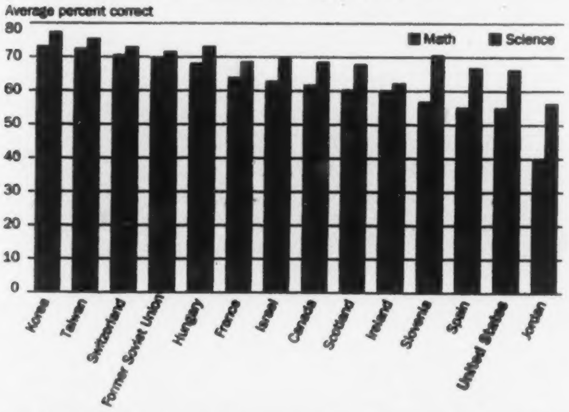
The Missing Link: Investment in Teachers

In 1983, *A Nation at Risk* declared our schools were drowning in a "rising tide of mediocrity."[2] Since then, hundreds of pieces of legislation have been enacted to improve them. In 1989, the nation's governors developed a set of education goals to further focus attention on the long-term work yet to be done. The goals boldly project that by the year 2000 all our students will come to school ready to learn; they will learn in safe, drug-free environments; virtually all of them will graduate with high levels of academic skills; and they will rank first in the world in mathematics and science.

Seven years later, America is still a very long way from realizing this future. Instead of all children coming to school ready to learn, more are living in poverty and without guaranteed health care than in the past.[3] Graduation rates and student achievement in most subjects have remained flat or have increased only slightly.[4] Only a small fraction of high school students can read, write, compute,

Mathematics and Science Test Scores of 13-Year-Olds

International Assessment of Educational Progress (IAEP): 1991



Source: Educational Testing Service, International Assessment of Educational Progress, *Learning Mathematics and Science*. Published in *Digest of Education Statistics 1995* (Washington, D.C., National Center for Education Statistics, 1995), pp. 432, 435

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and manage scientific material at the high levels required for today's knowledge-work jobs. According to national assessments, only about 10% of U.S. 17-year-olds can draw conclusions using detailed scientific knowledge; just 7% can solve math problems with more than one step; only 7% can read and understand specialized materials; and a mere 2% can write well-developed material.[5] Meanwhile, international tests continue to show U.S. high school students ranking near the bottom in mathematics and science.[6]

The teacher must remain the key. . . . Debates over educational policy are moot, if the primary agents of instruction are incapable of performing their functions well. No microcomputer will replace them, no television system will clone and distribute them, no scripted lessons will direct and control them, no voucher system will bypass them.

— *Lee Shulman,*
Professor

This distance between our stated goals and current realities is not due to lack of effort. Many initiatives have been launched by legislators, educators, businesses, and community organizations to improve education, and many of these have had a positive effect in local communities. Nonetheless, we have reached an impasse in spreading these promising efforts to the system as a whole.

After a decade of reform, we have finally learned in hindsight what should have been clear from the start: Most schools and teachers cannot produce the kind of learning demanded by the new reforms—not because they do not want to, but because they do not know how, and the systems in which they work do not support them in doing so. Most states and school districts have not yet put in place standards and curriculum frameworks that provide clear signals about the kinds of academic learning they value. They provide few opportunities for principals and teachers to learn how to redesign their organizations and curriculum to be more effective. And most current educators were prepared years ago in programs that did not envision the kinds of challenges schools now confront and did not have access to the knowledge about teaching and learning available today.

When it comes to widespread change, we have behaved as though national, state, and district mandates could, like magic wands, transform schools. But all the directives and proclamations are simply so much fairy dust. Successful programs cannot be replicated in schools where staff lack the know-how and resources to bring them to life. Wonderful curriculum ideas fall flat in classrooms where they are not understood or supported by the broader activities of the school. And increased graduation and testing requirements only create greater failure if teachers do not know how to reach students so that they can learn.

On the whole, the school reform movement has ignored the obvious: What teachers know and can do makes the crucial difference in what children learn. And the ways school systems organize their work makes a big difference in what teachers can accomplish. New courses, tests, and curriculum reforms can be important starting points, but they are meaningless if teachers cannot use them productively. Policies can improve schools only if the people in them are armed with the knowledge, skills, and supports they need. Student learning in this country will improve only when we focus our efforts on improving teaching.

Instead of mandates and directives, our schools need agreement on purposes and support to meet new standards. Rather than proclamations, schools need policies and working environments that attract the best people to teaching, provide them superb preparation, hone their skills and commitment in the early years, and keep them in the profession by rewarding them for their knowledge, skills, and good work.

Although important, understanding one's chosen discipline is not enough to ensure classroom success. One must also appreciate the developmental stages and learning styles of students; apply learning theory in individual and group contexts; balance classroom management needs with the nurturing and respect that all children need; model values required for good citizenship; evaluate, design, and select motivating tasks; communicate effectively to students and parents; and help students understand the connections among their subjects. [And] that's the short list.

— *Robert Feirsen, principal, W. T. Clarke Middle School in Westbury, New York*

I could write millions of pages about how much Mr. Mustapha cares about his students. . . . But just being a caring person does not mean one is a good teacher. Mr. Mustapha wants to impart to his students the knowledge of the biological aspects of the world around them, whether a student is in basic or advanced biology. He has done just that. . . . Thanks to his instruction, I have chosen to take biology in college and to major in genetic engineering. Someday I hope I can be as good a teacher as Mr. Mustapha is right now.

— *Michelle Renee Houy, former student of Francis Mustapha, South Side High School in Fort Wayne, Indiana*

This Commission starts from three simple premises:

1. **What teachers know and can do is the most important influence on what students learn.**
2. **Recruiting, preparing, and retaining good teachers is the central strategy for improving our schools.**
3. **School reform cannot succeed unless it focuses on creating the conditions in which teachers can teach, and teach well.**

The Importance of Teacher Knowledge

The first premise is one that virtually every parent understands and a large body of research confirms: **What teachers know and do is the most important influence on what students learn.** Competent and caring teaching should be a student right.

Research has discovered a great deal about effective teaching and learning: We know that students learn best when new ideas are connected to what they already know and have experienced; when they are actively engaged in applying and testing their knowledge using real-world problems; when their learning is organized around clear, high goals with lots of practice in reaching them; and when they can use their own interests and strengths as springboards for learning.[7] When teachers can work together to build a coherent learning experience for students throughout the grades and within and across subject areas—one that is guided by common curriculum goals and expectations—they are able to engender greater student achievement.[8]

We also know that expert teachers use knowledge about children and their learning to fashion lessons that connect ideas to students' experiences. They creat a wide variety of learning opportunities that make subject matter come alive for young people who learn in very different ways. They know how to support students' continuing development and motivation to achieve while creating incremental steps that help students progress toward more complicated ideas and performances. They know how to diagnose sources of problems in students' learning and how to identify strengths on which to build. These skills make the difference between teaching that creates learning and teaching that just marks time.[9]

Needless to say, this kind of teaching requires high levels of knowledge and skill. To be effective, teachers must know their subject matter so thoroughl that they can present it in a challenging, clear, and compelling way. They mus also know how their students learn and how to make ideas accessible so tha they can construct successful "teachable moments." Research confirms tha teacher knowledge of subject matter, student learning, and teaching method are all important elements of teacher effectiveness.[10]

Furthermore, studies show that teacher expertise is the most important fa tor in student achievement. A recent study of more than 1,000 school distric concluded that every additional dollar spent on more highly qualified teach netted greater improvements in student achievement than did any other use

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Making the Connection: Teaching for Real Learning

Hector Ibarra's middle-school science students are not yet researchers at Cal Tech or graduate students at MIT, but they already are scientists in the making. They identify and monitor the levels of radon, carbon dioxide, and electromagnetic radiation. They investigate the efficiency of water and energy fixtures. They measure the flow rates of sink aerators, retrofit water-consuming toilet tanks, and compare the energy used by incandescent and fluorescent light bulbs. They design, build, and race miniature solar cars.

"My approach to teaching builds upon the natural curiousity that is an integral part of all children," says Hector, who teaches earth and life sciences at West Branch Middle School in West Branch, Iowa. He develops hands-on environmental projects that guide students through their own discoveries and allow for real-life applications. All of his experiments are written in a question format requiring students to form a hypothesis, develop a procedure, collect and analyze data, and arrive at conclusions.

Hector's assignments encourage his students to go beyond the walls of their school. In a research project he designed with two public utility companies and a private management firm, the entire student body of West Branch Middle School measured and compared the efficiency of water and energy fixtures in their homes. The project won a host of awards, including one from the Environmental Protection Agency. According to EPA Administrator William Rice, the students' work "saved the community an estimated 40,000 gallons of water a week and helped reduce emissions of sulfur dioxide, carbon monoxide, and nitrogen dioxide through the use of energy-saving practices and devices."

Hector exposes his students to the cutting edge of scientific research and keeps himself there as well. Like his mother, an elementary teacher in his native Mexico who gave birth to him in the one-room schoolhouse where she taught, Ibarra lives education. Maybe that explains why, even with a full teaching load, Hector Ibarra is still going to school, at work on his doctorate in science education.

* * *

What are bubble blowers, tiny trucks, and a mini-merry-go-round doing in a precalculus classroom? They are helping Frank Venzant bring complex mathematical concepts to life for his high school students at Tullahoma High School in Tullahoma, Tennessee. Having come to math education from a career in electrical engineering, Vanzant understands the importance of students' developing an appreciation for math in the real world.

The measure of his success in his trigonometry, precalculus, and Advanced Placement calculus courses can be seen in his students' achievements. More than half of Frank's students earn scores at the "exceptionally well-qualified" level on the AP tests in calculus, as compared with about 17% nationally. Students like Genetta Gibson, who went on to major in engineering at Tennessee Tech, are living testimony to his influence. "I just loved him as a teacher," says Genetta. "He really cared whether or not we all understood what he was teaching."

Frank's commitment to his work runs deep. "I know of no other profession that can be as rewarding as teaching," he avers. "A teacher's influence on his students and society can never be fully observed or measured."

Behind Frank Venzant's problem-solving drive and can-do spirit lies the reflective, questioning, philosophical nature that is indispensable in some measure to all educators. "I believe," he says, "that teachers should constantly evaluate and adjust their methods in the classroom to better meet the needs of the students and society. The most effective teachers are those who also view themselves as professional students. Teaching demands not only leading students toward developing a desire to learn, but also maintaining that desire in oneself."

Adapted from the Milken Family Foundation, *The Impact of the Educator* (Santa Monica, Calif.: The Milken Family Foundation), pp. 10, 74. Copyright © 1995 by the Milken Family Foundation. Reprinted with permission.

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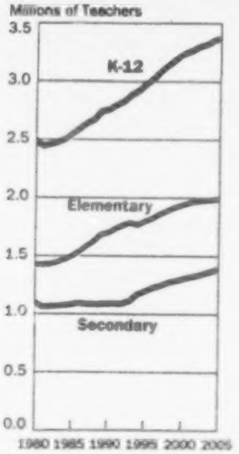
Demand for K-12 Classroom Teachers
Projected through 2005



Source: U.S. Department of Education, *Projections of Education Statistics to 2005* (Washington, D.C.: National Center for Education Statistics, 1995), p. 72

school resources.[11] Another study, comparing high-achieving and low-achieving elementary schools with similar student characteristics, found that differences in teacher qualifications accounted for more than 90% of the variation in student achievement in reading and mathematics.[12]

At a time when all students must meet higher standards for learning, access to good teaching is a necessity, not a privilege to be left to chance. And competent teaching depends on educators who deeply understand subject matter and how to teach in ways that motivate children and help them learn. Like doctors, engineers, and other professionals, teachers must have access to high-quality education and career-long opportunities to update their skills if they are to do their jobs well. In addition, quality controls must work to ensure that those who cannot teach effectively do not enter or stay in the profession.

The Need to Prepare and Keep Good Teachers

The second premise is also one that policymakers are just now beginning to comprehend: **Recruiting, preparing, and retaining good teachers is the central strategy for improving our schools.** In the next decade, the United States will need to hire more than two million teachers to handle huge enrollment increases, replace an aging teacher workforce ready to retire, and respond to the chronic attrition of new teachers that plagues American schools. Although some of these will be former teachers returning to the field, most will be newly prepared during this time, and the quality of their preparation will, to a large extent, influence the quality of teaching our schools provide.

By 1998, America's schools will enroll more children, 52 million, than they have ever enrolled before, even at the height of the baby boom. Schools already report shortages of qualified teachers in subjects like mathematics, physics, chemistry, and bilingual and special education. High-poverty urban and rural schools face persistent hurdles in hiring the teachers they need, and across the nation there is a critical need for many more teachers who reflect the racial and cultural mix of students in schools. Yet many school districts do little to recruit teachers or to keep good ones in the profession. They treat teachers like easily replaceable, interchangeable cogs in a wheel, meeting most of their personnel needs with last-minute scrambles to put warm bodies in classrooms.

In addition, current reforms have created new expectations for teachers that most have not been prepared to meet. To help diverse learners master much more challenging content, teachers must go far beyond dispensing information, giving a test, and assigning a grade. They must themselves know more about the foundations of subject areas, and they must understand how students think as well as what they know in order to create experiences that produce learning. Moreover, as students with a wider range of learning needs enter and stay in school—a growing number whose first language is not English, many others with learning differences, and others with learning disabilities—teachers need access to the growing knowledge that exists about how to teach these learners effectively. More teacher education programs are preparing teachers well for these new demands, but they are still too few and far between

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Clearly, the nation's teacher recruitment and development challenges are daunting. At the same time, these formidable challenges offer equally compelling opportunities. With major changes occurring in the teaching force while reforms are beginning to take root, the possibilities for recruiting and educating teachers well from the start are greater than they have ever been. With dedication, determination, and clarity of vision, our society can use this opportunity to develop a diverse, well-prepared, and culturally responsive teaching force that can serve as a foundation for the schools needed to maintain a prosperous and just society.

The Imperative to Create Schools That Support Learning

The third premise is one that people inside schools understand, but those outside may not: **School reform cannot succeed unless it focuses on creating the conditions in which teachers can teach, and teach well.**

Although many recent reforms are beginning to make a difference, most schools are still not structured to support high-quality teaching: Teachers do not have enough sustained time with their students each day and over the years to come to know them well and to tackle difficult kinds of learning with them; neither do they have time with their colleagues to work on improving what they do.

Inconsistent expectations for students and unequal financial and material resources are also major problems. A haphazard hodgepodge of policies has left schools without clear, compelling standards connected to the means to achieve them. Consequently, educators in different communities—and even in classrooms within the same building—often teach toward very different ends, with little help in building a powerful, cumulative learning experience for their students. Meanwhile, supports for teaching challenging subject matter—intellectually rigorous curriculum materials, laboratories, and computers—are absent from many schools.

Successful schools have found that they need to create communities that work toward shared standards, where students are well known both personally and academically, where parents are involved as partners, and where a variety of teaching approaches are used. Research concludes that much higher levels of achievement are found in smaller schools and units within schools where teachers know students and their families well, and where they can reinforce one another's efforts.[13] By developing common curriculum goals and working in teams, teachers can support high performance for their students.

In addition, like restructuring businesses, schools that have found ways to educate all students well have done so by providing ongoing learning for teachers and staff. They couple greater authority for classroom teachers and a greater press for achievement with the professional learning needed to give educators the tools they need to succeed with students.

The Bottom Line . . .

The bottom line is that there is just no way to create good schools without good teachers. Those who have worked to improve education over the last

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decade have learned that school reform cannot be "teacher-proofed." Success in any aspect of reform—whether creating standards, developing more challenging curriculum and assessments, implementing school-based management, or inventing new model schools and programs—depends on highly skilled teachers working in supportive schools that engender collaboration with families and communities.

What's my job all about? My job is all about those kids who walk into my door every day. My job is about introducing them to the world of learning and all those joys that are out there for them. I want to do it well and make a difference for them.

—Verleeta Wooten,
history teacher, West Seattle High School,
Seattle, Washington

No top-down mandate can replace the insights and skills teachers need to manage complex classrooms and address the different needs of individual students, whatever their age. No textbook, packaged curriculum, or testing system can discern what students already know or create the rich array of experiences they need to move ahead.

Exhortations to improve students' "higher order" thinking abilities accomplish little without able teachers who know how to support challenging learning. Concerns about "at-risk" children—those who drop out, tune out, and fall behind—cannot be addressed without teachers who know how to teach students who come to school with different learning needs, home situations, and beliefs about what education can mean for them. There is no silver bullet in education. When all is said and done, if students are to be well taught, it will be done by knowledgeable and well-supported teachers.

The High Stakes Involved: The Nature of America's Future

At issue in this discussion are very high stakes. The education challenge facing the United States is not that its schools are not as good as they once were. As some of their severest critics concede, they are better in many ways than they have ever been, having raised graduation rates and basic literacy for a much more inclusive group of students throughout this century.[14] The problem is that our complex, technological society requires that schools now help the vast majority of young people reach levels of skill and competence once thought within the reach of only a very few.

As recently as 1950, most people held blue-collar jobs in factories or businesses that involved fairly simple tasks, planned and organized by others. Schools stressed similar kinds of routine work for most students. The kind of teaching needed for these skills was not complicated. Teachers could manage by following workbooks and texts even if they did not have deep knowledge of subject matter or a command of varied teaching methods. If students did not succeed in school, it was not a major problem. Most did not even need to graduate from high school to make a good living in the manufacturing era.

But by the early 1990s, most assembly-line manufacturing jobs had disappeared from the United States. Blue-collar workers will comprise only about 10% of the workforce by the year 2000.[15] The "knowledge work" jobs that are replacing them require people to plan and organize much of their own work, manage teams, and use high levels of technical know-how. These new skills require an education that teaches students to frame their own problems, organize themselves, and persevere in complex projects rather than passively filling in worksheets. They demand mastery of advanced subject area content, research, and thinking skills formerly taught only to students thought to be headed for the best colleges. And they require classrooms in which students learn to work together successfully in teams rather than alone at their seats.

Tens of thousands of people not educated for these demands have been unable to make a successful transition into the new economy. A growing underclass and a threatened middle class include disadvantaged young people who live in high-poverty communities as well as working-class youth and adults whose levels of education and skills were sufficient for the jobs of the past but not for those of today and tomorrow. Those who succeed and those who fail are increasingly divided by their opportunities to learn.

In this knowledge-based society, the United States urgently needs to reaffirm a consensus about the role and purposes of public education in a democracy—and the prime importance of learning in meeting those purposes. The challenge extends far beyond preparing students for the world of work. It includes building an American future that is just and humane as well as productive, that is as socially vibrant and civil in its pluralism as it is competitive.

Today, Americans watch in dismay as the nation is split between wealth and poverty; as communities are divided by race and class; and as the backbone of our national life, the great American middle class, is left wondering about the future of its children when financial markets boom with every new corporate "downsizing." The central concepts that define America, ideas about justice, tolerance, and opportunity, are being battered.

In this environment, education must attend not simply to the nation's material well-being, but to its human core as well—to the intellectual and

The Core of Teaching

At the very core of teaching is the task of helping students make connections between what they already understand and the new concepts, information, or skills [we want them to learn]. Scientists of the human mind tell us we can remember very few totally separate items at once, and all learning is a process of somehow associating new information with old. So this is my job as a teacher: to help students make connections. And to do that, I need to have a pretty good picture of what their understandings are—or I need a way to probe those understandings.

At any moment, I have to decide whether to present information or stand back and let a student discover it. I have to know when and how to encourage, compel, accept, judge, nurture, admonish, humor, provoke, and inspire 30 individuals. Now if I am teaching your son or daughter, you undoubtedly hope that I understand your child well enough to make those decisions—so often spontaneous ones—wisely. And if I really understand your kid, if I can see into his soul a bit, or if I can figure out how his mind works when he's wrestling with a particular concept or skill, or if I can find a way to make him passionately interested in what I teach, I just might be able to inspire him to real heights. But if I don't understand, I can damage your child. I can turn him off, or set him back, or crush his feelings, or stifle his opportunities.

If I as one teacher fail to reach, nurture, and inspire your son or daughter, it's probably not the end of the world; a child can probably recover from this single experience. But if entire educational systems repeatedly misjudge or work ineffectively with certain children . . . we have a problem of national dimensions.

— CYNTHIA ELLWOOD, TEACHER,
MILWAUKEE, WISCONSIN

Source: Cynthia Ellwood, "Preparing Teachers for Education in a Diverse World," *Rethinking Schools: An Agenda for Social Change*, edited by David Levine, et al. (New York: The New Press, 1995), pp. 246-247.

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political values that long ago established America's moral claim on the admiration and envy of the world: the impulses toward innovation and entrepreneurship; toward cooperation and altruism; and toward action, creativity, and community. America's schools have always been the primary social agents to take on the task of blending the world's many into a nation of one.

We must reclaim the soul of America. And to do so, we need an education system that helps people to forge shared values, to understand and respect other perspectives, to learn and work at high levels of competence, to take risks and persevere against the odds, to work comfortably with people from diverse backgrounds, and to continue to learn throughout life.

All Americans have a critical interest in building this kind of education system. For example,

- Low levels of literacy are highly correlated with welfare dependency and incarceration—and their high costs.[16]
- More than half the adult prison population has levels of literacy below those required by the labor market.[17]
- Nearly 40% of adjudicated juvenile delinquents have learning disabilities that were overlooked and went untreated in school.[18]
- By the year 2010 there will be only three workers for every Social Security recipient, as compared with 16 in 1950. If all these future workers are not capable and productive, the older generation's retirement security and our social compact will be in grave danger.[19]

We cannot afford the continued expansion of prison populations, public assistance programs, and unemployment. Where we should be investing at the front end in education programs, preschool rolls, and job training, we are spending money at the back end on state penitentiaries, welfare rolls, and unemployment checks. Our failure to invest in adequate education and job chances means that a shrinking share of American citizens must generate the tax base that supports the rest of the nation—the young, the old, the ill, and those who are not now productive. We need to expand the number of people who can contribute to the nation's economy rather than those who must be supported from it. It is clear that if we do not invest in schools that can create adequate life chances for all of our young people, the results will be disastrous for both individuals and the nation.

Beyond these statistics and pressing concerns lies a sobering human reality—many of the nation's children are in deep trouble. Over the last generation, American families and communities have changed profoundly. We lead advanced nations in rates of childhood poverty, homelessness, and mortality rates for those under age 25, and we lag in rates of children enrolled in preschool education. Most children live in a single-parent household at some time while they are growing up. Many parents are hurried and harried as they try to earn enough to support their families and attend to their children's needs with fewer community supports to help them. Many children arrive at school hungry, unvaccinated, and frightened because the plagues of modern life—crime and violence, drug and alcohol abuse, lack of adequate health care—rage on unabated. Teachers are well aware that today's students lead much more stressful lives than did students of a generation ago. But despite the dedication of their staffs, most schools are organized as though none of this had happened.

At the same time, our schools are more diverse and rapidly becoming more so. More students, including those with a variety of special needs, enter and stay in school longer than ever before. In addition, by the year 2010, at least a third of all children in this country will be members of groups currently considered "minorities." Big-city schools are already educating a new generation of immigrants from Eastern Europe, Central America, Asia, and Africa, one that rivals in size the great immigrations of the 19th and early 20th centuries.

This nation has always drawn its strength and its unique character from its diverse peoples—those who began here and those brought here under duress as well as those who have come seeking haven, carrying little more than hope, a willingness to work for a new future, and a dream of a better life for their children. America's schools have always been the major vehicle for developing the skills and the shared ideals that make the American dream possible. Today more than ever, as the nation catapults into an era demanding high levels of knowledge and skill from all its citizens, its success in embracing and enhancing the talents of these new and previously unincluded members will determine much of its future. Schools need partners in this work, including high-quality systems of preschool education and health care to which all children have access, and community supports that help families build a safe and healthy family life.

In short, to meet the needs of the 21st century, schools must successfully teach many more students from much more diverse backgrounds. And they must help them master more challenging content many times more effectively than they have ever done before. This means that teachers must understand students and their many pathways to learning as deeply as they comprehend subjects and teaching methods. It means that teachers need to understand how students of different language backgrounds and cultures can be supported in learning academic content and how those with a range of approaches to learning can be met with a variety of teaching strategies. It also means that schools must reorganize themselves to enable more intensive kinds of learning, supported by close, personal relationships as well as new technologies.

This point is critical: It is not just that educational demands are increasing, but that the very nature of learning is changing. Students must do more than learn new facts or cover more chapters; they must learn to integrate and apply their knowledge in more complex ways to more difficult problems. This means that teachers must accomplish very different things that require them to work in new ways. Consequently, the nature of their preparation and the settings in which they teach must change substantially as well.

[Emma Belle Sweet] taught me many things, and especially geography, in that large sixth-grade class in the old Fourth Ward School in Albuquerque, now long since destroyed by fire. But nothing could be so important to me and of such enduring quality as her simple, human act of figuratively leading me gently by the hand to a sense of self-respect, dignity, and worth.

— Ralph Bunche,
Nobel Peace Prize winner

The Right to a Qualified Teacher

In the face of our nation's needs, the impediments to good teaching are formidable. It is now time to address openly what is only tacitly acknowledged when educators answer questions about their occupation with the response, "I'm just a teacher." Despite glimmers of hope created by recent reforms, teaching continues to be treated as low-status work, much as it was 80 years ago when teaching positions were among the few available to women and minorities. In the United States, teaching has long been viewed as little more than a combination of glorified baby-sitting and high-level clerical work. Although progress has been made in recent years, teachers in many school districts are still underpaid, micromanaged, and treated as semiskilled workers.

Many states and districts have spent more energy trying to develop regulations intended to prevent poor teaching than trying to prepare top-flight teachers. Below-market wages produce chronic shortages of qualified teachers in fields like mathematics and science. Standards for entry into teaching are inconsistent and frequently unenforced. Teacher preparation is often inadequate, whether for the second-grade teacher—often expected to be a jack-of-all-trades with little in-depth subject matter knowledge—or for the eleventh-grade chemistry teacher, prepared with little in-depth teaching knowledge for the challenges posed by higher standards, changing technologies, and a more diverse student body.

By the standards of other professions and of teacher education in other countries, U.S. teacher education has historically been thin, uneven, and poorly financed. Although some schools of education provide high-quality preparation, others are treated as "cash cows" by their universities, bringing in revenues that are spent on the education of doctors, lawyers, and accountants rather than on their own students. As a result, teachers do not always have adequate disciplinary preparation in the fields they teach or adequate knowledge and supervised practice to enable them to use effective teaching strategies.

Moreover, teacher recruitment is ad hoc; hiring and tenure decisions are often disconnected from any clear vision of quality teaching; beginning teacher mentoring and professional development for experienced teachers are the first things eliminated in budget cuts. Working in isolation with few chances to update their skills, teachers are deprived of knowledge that would allow them to succeed at much higher levels. Meanwhile, most education dollars are spent on staff and activities other than classroom teaching.

But our schools' most closely held secret amounts to a great national shame: Without telling parents they are doing so, many districts hire unqualified people as "teachers" and assign them full responsibility for children. More than 12% of all newly hired "teachers" enter without any training at all, and another 14% enter without having fully met state standards.[20] Although no state will allow a person to fix plumbing, guard swimming pools, style hair, write wills, design a building, or practice medicine without completing training and passing an examination, more than 40 states allow school districts to hire teachers on emergency licenses who have not met these basic require-

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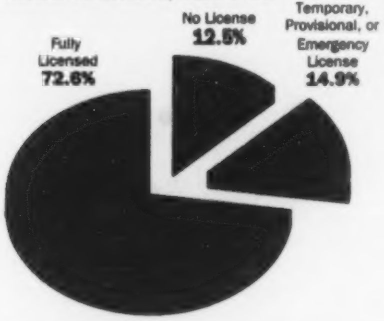
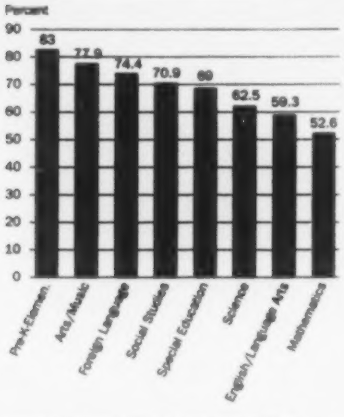
Qualifications of Newly Hired Teachers, 1990-91



Source: U.S. Department of Education, Schools and Staffing Survey, 1990-91. Unpublished tabulations, National Data Resource Center, 1993

Percentage of Public School Teachers with a State License and a Major in Their Main Teaching Assignment Field: 1990-91



Source: U.S. Department of Education, Schools and Staffing Survey, 1990-91. Published in Marilyn M. McMillen, Sharon A. Bobbitt, and Hilda F. Lynch, *Teacher Training, Certification, and Assignment in Public Schools: 1990-91* (paper presented at annual meeting of the American Educational Research Association, New Orleans, LA, April 1994)

ments. States pay more attention to the qualifications of veterinarians treating the nation's cats and dogs than to those of teachers educating the nation's children and youth.

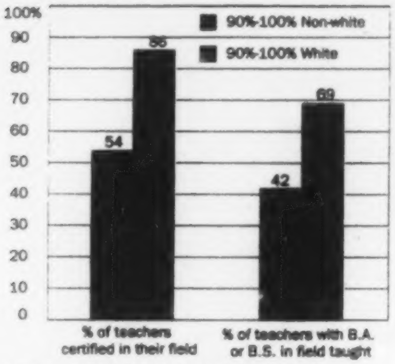
In many states, standards are simply waived whenever school districts want to hire teachers who cannot make the grade. Sometimes this is a function of genuine shortages in fields of short supply. Often, however, it occurs due to short-sighted hiring procedures, administrative convenience, efforts to save on teacher costs in favor of more "important" areas, and plain old-fashioned patronage. Although hundreds of studies have shown that fully prepared teachers are more effective than those who are unqualified, the practice of hiring untrained teachers continues.[21]

Will Rogers once quipped that "you can't teach what you don't know any more than you can come back from where you ain't been." His common-sense advice has been lost on many school districts. Consider:

- In recent years, more than 50,000 people who lack the training required for their jobs have entered teaching annually on emergency or substandard licenses.[22]
- Nearly one-fourth (23%) of all secondary teachers do not have even a college minor in their main teaching field. This is true for more than 30% of mathematics teachers.[23]
- Among teachers who teach a second subject, 36% are unlicensed in the field and 50% lack a minor.[24]

Qualifications of Secondary School Mathematics and Science Teachers

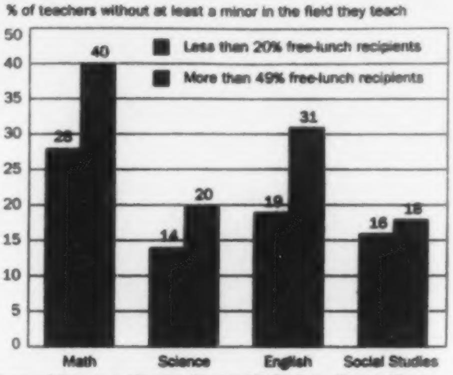
By school racial composition



Source: Jeannie Oakes, *Multiplying Inequalities: The Effects of Race, Social Class, and Tracking on Opportunities to Learn Mathematics and Science* (Santa Monica, Calif.: RAND Corporation, 1990), p. 61

Qualifications of High School Teachers

By school poverty level



Source: U.S. Department of Education, Schools and Staffing Survey, School and Teacher Questionnaires, 1990-91. Published in *Teacher Supply, Teacher Qualifications, and Teacher Turnover: 1990-91* (Washington, D.C.: National Center for Education Statistics, 1995), p. 26

- 56% percent of high school students taking physical science are taught by out-of-field teachers, as are 27% of those taking mathematics and 21% of those taking English.[25] The proportions are much higher in high-poverty schools and in lower track classes.

- In schools with the highest minority enrollments, students have less than a 50% chance of getting a science or mathematics teacher who holds a license and a degree in the field he or she teaches.[26]

In the nation's poorest schools, where hiring is most lax and teacher turnover is constant, the results are disastrous. Thousands of children are taught throughout their school careers by a parade of teachers without preparation in the fields they teach, inexperienced beginners with little training and no mentoring, and short-term substitutes trying to cope with constant staff disruptions.[27] It is more surprising that some of these children manage to learn than that so many fail to do so.

Unequal resources and inadequate investments in teacher recruitment are major problems. Other industrialized countries fund their schools equally and make sure there are qualified teachers for all of them by underwriting teacher preparation and salaries. However, teachers in the United States must go into substantial debt to become prepared for a field that in most states pays less than any other occupation requiring a college degree.

Meanwhile, teachers' salaries, like all other education expenditures, vary

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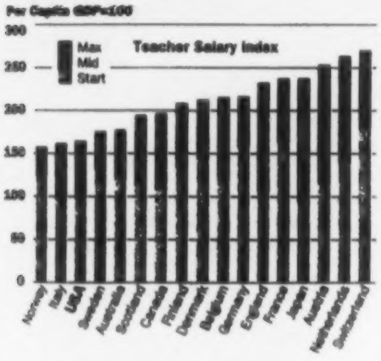
Teacher Salaries Around the World

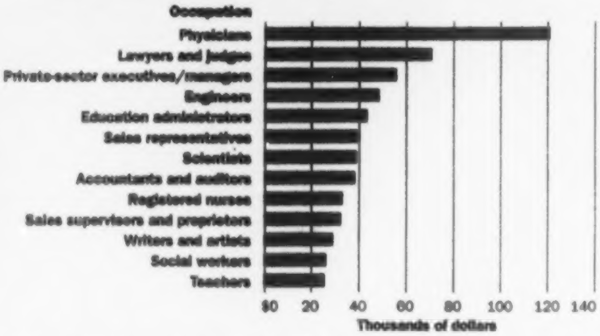
Upper Secondary Teacher Salaries



Source: F. Howard Nelson and Timothy O'Brien, *How U.S. Teachers Measure Up Internationally: A Comparative Study of Teacher Pay, Training, and Conditions of Service* (Washington, D.C.: American Federation of Teachers, 1993), p. 90

Comparisons of Earnings by Occupation

Average annual earnings in the previous year, 1991



Source: U.S. Department of Education, National Adult Literacy Survey, 1992. Published in the *Condition of Education 1995* (Washington, D.C.: National Center for Education Statistics, 1995), p. 161

greatly among districts and states. For example, average salaries in 1991 ranged from $20,354 in South Dakota to $43,326 in Connecticut,[28] with salaries in affluent suburban districts much higher than those in cities or rural communities within the same area. Because rich schools spend as much as ten times what poor schools do,[29] they can recruit the most highly educated and experienced teachers. Benefiting from recent reforms, many of the new teachers in these wealthy districts are better prepared than ever before. The result is a bimodal teaching force in which some teachers are increasingly expert and others are wholly unprepared. For every newly hired teacher without training, there is another who enters with a master's degree from a rigorous teacher education program.

This situation is not necessary or inevitable. While the hiring of unprepared teachers is a long-standing tradition in the United States, the practice was almost eliminated during the 1970s with scholarships and loans for college students preparing to teach, Urban Teacher Corps initiatives, and Master of Arts in Teaching (MAT) programs, coupled with wage increases. However, the cancellation of most of these recruitment incentives in the 1980s led to renewed shortages when student enrollments started to climb once again, especially in cities. Between 1987 and 1991, the proportion of well-qualified new teachers in public schools—those entering teaching with a college major or minor and a license in their fields—actually declined from about 74% to 67%.[30]

For all these reasons, the quality of teaching in the United States varies dramatically across classrooms and communities. Some children benefit from high-quality curriculum taught by able and committed teachers who understand their subjects and how to teach so that their students excel. Others trudge through uninspired texts and workbooks with little intellectual challenge, taught by teachers who know little about their subjects and even less about how children learn. And while some schools are using the most up-to-date knowledge about how to teach successfully, a surprising number actually require teachers to use strategies that research has found to be ineffective.[31] We can do better. And we must.

We know how to prepare teachers to teach well. All around the country, successful programs for recruiting, educating, and mentoring new teachers have been launched. Professional networks and teacher academies have sprung up. Many education schools have been redesigned; stronger standards for teacher licensing and accreditation of education schools have been developed; and a new National Board for Professional Teaching Standards has begun to define and recognize accomplished teaching.

However, we have been much more skillful at inventing programs than at creating policies for making these good ideas widespread. Current efforts are isolat-

Covering the Curriculum . . .

Visiting a fourth-grade class, I was greeted by the teacher. "Welcome to our class," she said. "I'm on page 307 of the math text, exactly where I'm supposed to be according to board guidelines."

There was not much going on—two students were asleep, several were looking out the window, a few were reading their math books. I discovered later that virtually every student in the class was failing math. But this teacher was doing her job, moving through the set curriculum, dutifully delivering the material, passing out the grades. If the students did not learn math, that was not her responsibility.

. . . Or Teaching for Understanding?

Sandra McLain's Writing to Read room bustles with 18 first-grade children conducting experiments, writing on computers, illustrating, and reading. In one corner of the room, a group of first-grade students is working on a lab experiment investigating traits of plants. Students are classifying, sorting, and measuring as they finish up a three-week unit focused on seeds, stems, and leaves. Above them is a poster board displaying vegetables and their traits, with categories they developed that reveal a great deal of what they are learning. These students wear visors with the word "scientist" inscribed on top.

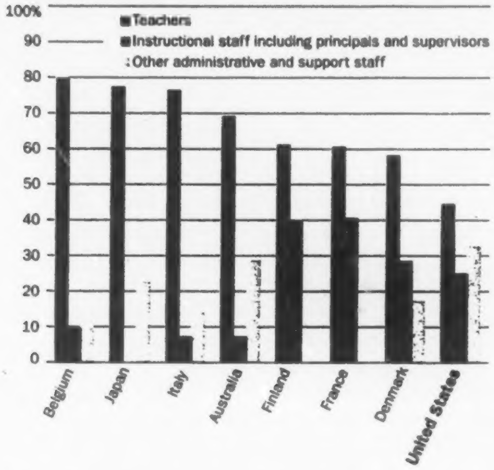
Other students are writing about what they are learning. Those students wear visors with the word "author" inscribed on top. Sandra deftly reads and critiques Constance's work, and says, "You just about have a science book written." Constance joyously responds with a "YES!" Another student rushes up to Sandra showing her an essay. A student comes up to me wearing yet another visor, this one with "illustrator" on top, showing me his picture that went along with his essay about his science experiment. In other corners of the room, a child is sitting on a bean bag reading while next to him another child "meets an author" on audiotape. Across the room there are three computers where students brush up on phonemes. "The more they write, the more they learn," Sandra explains.

Adapted from: William Ayers, "The Shifting Ground of Curriculum Thought and Everyday Practice," *Theory Into Practice* 31 (Summer 1992): 259; and Barnett Berry, "School Restructuring and Teacher Power: The Case of Keels Elementary," in Ann Lieberman (ed.), *The Work of Restructuring Schools: Building from the Ground Up* (New York: Teachers College Press, 1995).

ed and piecemeal. Moreover, they are layered onto a system that resists investments in high-quality teaching—a system that does little to help teachers acquire greater knowledge and skill, rewards teachers for leaving the classroom, and tolerates extraordinary inequalities in students' and teachers' opportunities to learn.

There is a better way. In most European and Asian countries, teachers are highly respected, well compensated, and better prepared. They receive much more extensive training in content and pedagogy before they enter teaching, and they have much more regularly scheduled time for ongoing learning and work with their colleagues. In addition, they work in school settings that are structured so that they can focus on teaching and come to know their students well. These nations do not spend more on education, but they invest more in teaching than in bureaucracy, hiring many fewer nonteaching staff and many more teachers who take on greater responsibility with greater supports. Like progressive firms, they work to get things right from the start. Rather than spend money on add-ons and band-aid programs to compensate for the failures of teaching, they spend their education resources on what matters most: well-trained teachers who work intensively with students and with other teachers to improve teaching and learning. And they get better results.

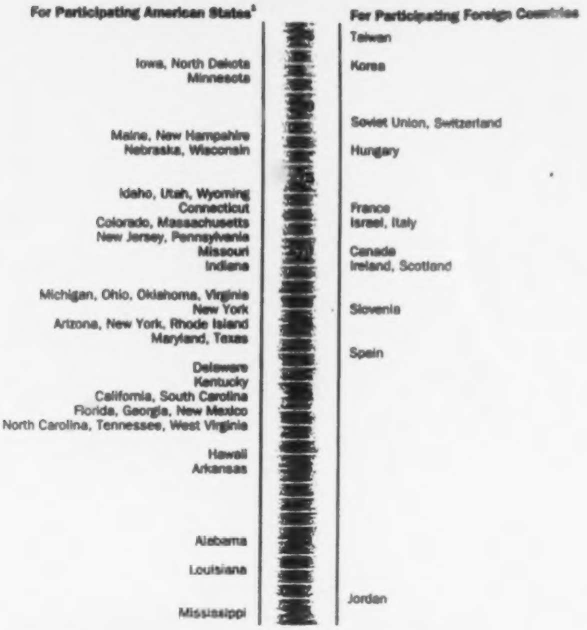
Comparisons of Educational Staff By Function



Source: Organization for Economic Cooperation and Development (OECD), *Education at a Glance: OECD Indicators* (Paris: OECD, 1995), table p31, pp. 176-177

Students in some states in the United States perform as well as those in top-ranked countries, while other states' students rank with countries at the bottom. The best and worst performers are distinguished in part by the attention they pay to teacher quality. Top-ranked states like North Dakota, Minnesota, and

Average Mathematics Proficiency Scores for 13-Year-Olds (in Other Countries): 1991 or 1992



Notes:

1. The states of Alaska, Illinois, Kansas, Montana, Nevada, Oregon, South Dakota, Vermont, and Washington did not participate. The District of Columbia is not displayed.

Mathematics Proficiency has a range from 0 to to 500 with:
Level 250 = Numerical operations and beginning problem solving
Level 300 = Moderately complex procedures and reasoning

Source: U.S. Department of Education, *Education in the States and Nations* (Washington, D.C.: National Center for Education Statistics, 1993), pp. 56-57. Published in David C. Berliner and Bruce J. Biddle, *The Manufactured Crisis: Myths, Fraud, and the Attack on American Public Schools* (Reading, MA: Addison-Wesley, 1995), p. 61

Iowa all have professional standards boards that have enacted high standards for teacher preparation and licensing. They have virtually eliminated the practice of hiring unqualified teachers. Those at the bottom, however, still hire very large numbers of untrained teachers each year—9% of newly hired teachers in Alabama and Mississippi and 23% in Louisiana were unlicensed in 1991—and their students' learning suffers for it.[32]

Hence this Commission's sense of urgency. Our society can no longer accept the hit-or-miss hiring, sink-or-swim induction, trial-and-error teaching, and take-it-or-leave-it professional development it has tolerated in the past. The time has come to put teachers and teaching at the top of the nation's education reform agenda.

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Our Goal for America's Future . . .

We propose an audacious goal for America's future. Within a decade—by the year 2006—we will provide every student in America with what should be his or her educational birthright: access to competent, caring, qualified teaching. No more hiring unqualified teachers on the sly. No more nods to teacher education programs that fail to prepare teachers adequately. No more ignoring the problems of teachers who do not teach well. Children are compelled by law to attend school, and most states promise them a thorough and efficient education. In the face of these state mandates, students have a right to benefit from the knowledge and skill possessed by qualified teachers.

This is a challenging goal to put before the nation and its educational leaders. But if the goal is challenging and requires unprecedented effort, it does not require unprecedented new theory. Common sense suffices: American students are entitled to teachers who know their subjects, understand their students and what they need, and have developed the skills required to make learning come alive.

We need to create a rising tide of excellence in our nation's classrooms if our children are going to succeed. This report describes a set of building blocks for doing so:

- **Standards for student learning** that allow teachers and parents to organize their efforts in a common direction;
- **Standards for teaching** that define what teachers must know to help their students succeed;
- **High-quality preparation and professional development** that help teachers develop the skills they need;
- **Aggressive recruitment of able teachers in high-need fields;**
- **Rewards for teacher knowledge and skill;** and
- **Schools organized for student and teacher learning** in the ways they staff, schedule, and finance their work.

We believe all these issues must be tackled together, rather than handpicked to deal only with the easiest ones. Anything less will shortchange our children and compromise the American future.

A Better Way: Faye Freeman's Class

Faye Freeman's third-grade class bubbles with energy and purpose. As the day begins, children enter smiling and cluster around her desk to find out what lies ahead. The day's work plan is on the board, right above a row of inviting children's books on the chalk tray. The 26 students from this small urban community in New Rochelle, New York, reflect a typical American classroom in 1996 and a full range of learning needs: Their homes range from housing projects and small bungalows to elegant colonials. About one-third are African American or Latino; two of the children speak languages other than English at home; another two receive special education services part of each day.

These distinctions are meaningless here, however. The class hums like a well-rehearsed orchestra as students move to their places in the middle of the room for meeting time. To prepare for a story-writing assignment, they brainstorm ideas about how to make their group work productive. Freeman skillfully guides the discussion and writes their ideas on the board: "Everyone should share." "Cooperate and work together." "Sometimes we have to compromise." "Respect everyone's ideas."

She reminds them to make a web of their ideas so that they can figure out how to put them in order. The children hurry back to their desks, clustered together in groups of four to six, and begin work immediately. "You have to get everyone's ideas," one tiny girl reminds a young boy at her table. Everyone is hard at work, heads leaning toward one another as they offer and record ideas. Some run to the bookshelf for dictionaries and other books that provide the research they need. In the middle of one web, a group has written "The terrible storm." "First it started drizzling," the recorder has noted. "What happens next?" a visitor asks. "We don't know!" the recorder exclaims, as though that should be obvious. "Then it started to pour!" her tablemate offers. They are off and writing.

Faye moves from one group to the next, checking, questioning, prodding, hugging, nudging. The students need little help. They are already seasoned writers. They write every day in every area of the curriculum—explaining their math problems; recording their steps in constructing dams, levers, and pulleys; researching countries and historical figures; expressing their ideas in poetry and stories. These assignments help students develop both the clarity of their thinking and their writing skills. It is no wonder that this class scores at the top of the district each year on the district's writing assessment. "If you come in this room, you have to work," one child notes proudly.

All kinds of parents request Faye Freeman, and all kinds of students thrive in her class—both those who struggle to learn and those who soar. The elements of good teaching are readily apparent: lots of interesting work; plenty of opportunities to practice and succeed; clear expectations and structure, blended with opportunities to imagine and create. New ideas are introduced through connections to children's lives and experiences, then taken much further with careful scaffolding of new concepts. Cooperative and individual tasks are skillfully managed to build on students' strengths and address their needs. The rich curriculum always demands active intellectual effort. "She teaches us to think even when we don't have to!" exclaims one student.

Like other great teachers, Faye Freeman's career is that of a learner. Her mother taught four generations of students in a one-room K-8 schoolhouse ("the colored school," Faye notes) in a little town in North Carolina. Faye's undergraduate degree from Suffolk University in Boston and master's degree from Bank Street College of Education in New York were pivotal, she believes, in helping her attend to children's thinking as a basis for shaping teaching. "It made me a better teacher. . . . I really need to know what the students are thinking." She is now in a doctoral program at Columbia University's Teachers College because "I was getting burned out, but what I really needed was to go back to school . . . I wanted to grow; I wanted to learn."

Faye's path mirrors that of other excellent teachers who have developed their skills more or less on their own by reading, attending workshops, and sending themselves off to school for new insights into teaching. Whatever they learn they immediately turn to the benefit of their students. They will tell you, as Faye does, that the dollars they invest in their own studies are as essential to their students' success as the dollars they continually spend for classroom materials and supplies.

Many teachers like Faye Freeman entered teaching several decades ago when it was one of only a few professional careers available to women and people of color. Although she is often urged to go into administration, Faye's heart is in the classroom where she can see her students grow and achieve. Generations of parents and students are grateful that it is.

Dimensions of the Challenge

In a truly rational society, the best of us would be teachers, and the rest would have to settle for something less.

— Lee Iacocca

Good teachers are those who can transmit a passion for learning. They believe all children can learn, some may take a little longer, but will not stop until they have tried everything they can and then some. They understand that learning is a lifelong experience and let their children see they are still learning. . . . Good teachers care about their students as people, not just grades in a book.

— Joanne Leavitt, parent, Santa Monica, California

The public reveals an understanding of the importance of teaching that is not yet apparent in the pronouncements of experts and officials. In a recent Gallup poll, the great majority of voters identified the quality of public education as the most important issue for the 1996 presidential campaign.[33] When asked, "What is the most important thing public schools need in order to help students learn?" the top response, by a large margin, is "good teachers."[34]

Americans understand that teachers are the key to improving education, and they put their faith in teachers to do so. When asked, "Whom do you trust to make decisions about schools?" parents (67%) and teachers (64%) are runaway favorites—far outdistancing education experts (47%), business leaders (29%), elected officials (28%), and Washington bureaucrats (14%).[35]

However, based on its two-year study, the Commission is convinced that seven unresolved issues present formidable barriers to enacting the agenda the public says it wants. These barriers define the dimensions of the challenge facing American schools and teachers. They are:

1. **Low expectations for student performance.**
2. **Unenforced standards for teachers.**
3. **Major flaws in teacher preparation.**
4. **Painfully slipshod teacher recruitment.**
5. **Inadequate induction for beginning teachers.**
6. **Lack of professional development and rewards for knowledge and skill.**
7. **Schools that are structured for failure rather than success.**

Low Expectations for Student Performance

Throughout this century, little academic achievement has been expected of most students, who were presumed to be preparing for low-skilled jobs. Schools have rationed challenging curriculum—the kind that requires independent thinking, writing, planning, and performance—to the 10% to 20% of students who were thought to be headed for intellectual pursuits. While the economy and society now demand this kind of curriculum for virtually all students, teaching in many classrooms still features the anemic texts, "chalk and

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talk" lectures, and fill-in-the-blanks workbooks of an earlier age. These strategies will not enable students to acquire the new basics they need: the abilities to understand and use complex materials, communicate incisively, plan and organize their own work, solve mathematical and scientific problems, create ideas and products, and use new technologies in all of these pursuits.

Standards that reflect these imperatives for student learning are largely absent in our nation today. This is not well understood, however, because American students are at once overtested and underassessed. The widespread use of standardized tests creates the illusion that learning is regularly evaluated. Although current tests do measure some things, they generally are not directly related to the school curriculum and ignore many important kinds of learning. Unlike tests in other countries, which are usually essay, oral, and performance examinations tied to a common curriculum, multiple-choice tests of basic skills that predominate in the United States tend to represent low-level skills and provide little useful information for teaching.[36] Similarly, school textbooks and guides rarely reflect a powerful, coherent concept of curriculum. The standards they implicitly represent are out of synch with our needs and provide little useful leverage for reform. In addition, many schools, colleges, and employers find the current evidence about student learning is not compelling enough to make judgments about what students know and can do.

This situation is changing, although slowly. Since 1989, when President Bush and the nation's governors—under the leadership of Bill Clinton, then governor of Arkansas—developed the National Education Goals, educators have made a concerted push to develop demanding, "world-class" curriculum standards in key areas, including mathematics, science, English, history, geography, civics, and the arts. These standards are being used in many states to develop new curriculum frameworks that help clarify what students must learn to be successful in today's world, along with assessments that reflect the real-world tasks students should accomplish to meet the standards.

This process should be supported and accelerated so that high-quality, professionally informed curriculum guidance is widely available to help teachers organize their teaching and build on the work of their predecessors. For students, new curriculum and assessments need to support challenging academic coursework from elementary school to high school and higher standards for graduation that better reflect the demands of today's society. Assessments of performance should provide richer information about learning throughout the grades and evaluations at the end of high school that are relevant to the decisions of colleges and employers. In addition to all the efforts teachers must make to teach to new standards, students will need to work hard to meet them. To have a reason to do this, they must know that their work counts in determining school placements, graduation, access to good jobs, and admission to higher education. Schools that are explicit about the achievements that are expected of students can provide clarity for students and leverage for teachers in the long process of developing proficient performance.

This Commission is convinced that common agreement on what students should know and be able to do is long overdue. Without publicly established

A good teacher is someone who tries to understand students as individuals at all times, who has solid lessons for us but brings in his or her own personal experiences to make it more interesting. You don't know how much you are learning until you get home and start thinking about it. My English teacher, for example, gets us involved in literature and handles the classroom so that everyone participates. She knows her subject. She must have read every book plus some!

— *Damon Banks,*
student, James Island High School,
Charleston, South Carolina

standards for content and performance grounded in high expectations for learning, we will continue what we have now—an unacknowledged national curriculum, predicated on low expectations, unaligned with our needs, and developed without public oversight by publishers and testmakers.

We are confident that, although difficult, the effort to develop standards will ultimately bear fruit, to the benefit of our students, our schools, our teachers, and our future. Much of this confidence rests on the general public's common sense and support for higher student achievement. Recent polls show that more than 80% of parents and the public favor high academic stan-

Standards for Learning

Curriculum standards in Long Beach, California, used to be lists of topics, long ones taken mostly from the teachers' guides to textbooks. There was no need to refer to them often because if teachers just followed the text, they were meeting the district requirements. No one questioned where they came from, and few actually cared. Yet, this community, affectionately known as "Iowa by the Sea" because of Midwestern immigrants who settled here generations ago, is undergoing major change. Another wave of immigrants from all over the world is requiring teachers to reexamine their skills, just as the more challenging expectations conveyed in California's curriculum frameworks and national professional standards are causing them to reassess the content they teach.

New content standards have become a tool to address these changes. The standards now in use in Long Beach are hot items that seem to pop up everywhere but on a shelf. Developed by groups of teachers and administrators over many months, they draw upon nationally developed standards, state curriculum frameworks, and local expertise. Once the standards in core subject areas had been reviewed by teachers, revised, and adopted, they became the basis for selection of textbooks instead of the other way around. They provide a basis for discussing education. Parents of preschoolers, for example, receive pamphlets about reading and math standards. Family curriculum nights plunge parents into doing projects related to standards.

The new standards cover the basics and also emphasize understanding and applications of skills. The previous curriculum guide for algebra merely listed more than 50 topics without asking students to demonstrate mastery of what they learned. The new algebra standards emphasize such tasks as analyzing, investigating, applying, describing, and visualizing real-world problems.

Tougher standards for students required totally different approaches to professional development. Teachers realized they needed new knowledge of content and methods to teach to higher standards. Gradually, teacher learning activities are being organized around the new standards with an emphasis upon using student work as the basis for discussions of teaching and learning.

Raising content standards for students ultimately will affect everything from teacher preparation programs to state assessment policies. For Marshall Middle School principal Karen DeVries, it began with a yearlong effort to enable teachers to examine the standards and relate them to their instruction. Each month in department meetings, Marshall teachers go over their assignments, explain how they relate to specific standards, and submit student work to illustrate the linkages. Before the new standards, teachers "sort of did their own thing," explains science department chair Thomas Ibarra, and students often repeated lab experiments and units from one year to the next. "Organizing around the content standards has been a nonthreatening way to get coordination into the curriculum," he says. Not only is science instruction now more focused, but new teachers can look at the documentation system and know immediately what students have been doing.

After just a few months of organizing professional development around standards, DeVries believes the content standards are "intruding on the traditional isolation of teachers" and encouraging teachers to talk about student work. They are beginning to exchange ideas about what is a high performance standard. By sharing their work, she says, "teachers also are sharing what most motivates kids, what really helps improve their learning."

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dards and clear guidelines for curriculum. They also want schools that offer support for student learning—schools that are engaging and humane, that make learning interesting and enjoyable for students, and that teach the values that underlie democratic living: honesty, respect for others, and equal opportunity.[37]

We see standards in the same way—as an organizing framework that provides one crucial component for greater student learning. Standards that outline a core curriculum entitlement, along with assessments that reflect the demands of 21st century life, can help schools focus their energies. The essential companion to this effort, then, is the investment in teacher and school capacities that makes possible the kinds of teaching parents want and all students need.

A lot of times we don't expect enough of the students. That to me is lack of respect. To me, *expect* is *respect*. In other words, if you don't expect something of someone, they'll be satisfied with less. I think that's been done with women and minorities throughout the years. And they'll never see that next plateau. So I think you have to make it fairly rigorous. If they don't get it, just sit down and roll up your sleeves and *be* with them. It seems to work.

— W. Dean Eastman,
Social Studies Teacher,
Beverly High School, Beverly, Massachusetts

Unenforced Standards for Teachers

Setting standards is like building a pyramid: Each layer depends on the strengths of the others. Students will not be able to achieve higher standards of learning unless teachers are prepared to teach in new ways and schools are prepared to support high-quality teaching. Higher standards for students must ultimately mean higher standards for teachers and schools. Otherwise, the end result of the standards movement will be more clearly documented failure rather than higher levels of overall achievement.

Teaching in ways that help diverse learners master challenging content is much more complex than teaching for rote recall or low-level basic skills. Enabling students to write and speak effectively, to solve novel problems, and to design and conduct independent research requires paying attention to *learning*, not just to "covering the curriculum." It means engaging students in activities that help them *become* writers, scientists, mathematicians, and historians, in addition to learning *about* these topics. It means figuring out *how* children are learning and what they actually *understand* and can *do* in order to plan what to try next. It means understanding how children develop and knowing many different strategies for helping them learn.

Teachers who know how to do these things make a substantial difference in what children learn. Furthermore, a large body of evidence shows that the preparation teachers receive influences their ability to teach in these ways.[38] However, many teachers do not receive the kind of preparation they need, and few standards are in force that distinguish those who know how to teach successfully from those who do not.

Most parents and members of the public assume that teachers, like other professionals, are educated in similar ways, so that they acquire common knowledge and meet common standards before they are admitted to practice. You would be correct if you assumed that any doctor you chose had studied anatomy, physiology, pathology, and much more, and that any lawyer you selected had learned the basics of torts, contracts, and criminal and civil law. Both also will have passed a rigorous test of their knowledge and ability to apply it. You would be incorrect much of the time, however, if you assumed that any teacher to whom your child was assigned had a degree in his or her

The one thing that I will always remember about Mrs. James is that she WAS history. She knew everything. You could have put her in the shoes and dress of any person in history and she would have been them, because she knew it so well. . . . It's knowing the subject so well, being passionate about it, and wanting to teach it to *these* students [that makes the difference]. Mrs. James loves us—she tells us that every day—and she loves U.S. history, so she's passionate about the subject, she's done all of her homework, and she wants to be there.

— Lynne Davis,
High School Senior

subject; had studied child development, learning, and teaching methods; and had passed tests of teaching knowledge and skill. In fact, well under 75% of teachers meet this standard.[39]

Ms. Turner just put her soul into her work. . . . She didn't mind revising the work; she didn't mind talking about it; she didn't mind reading it 20 times. . . . Every time I'd come back to her for a conference, she would read through it and say, "Is there a better way of writing this? I like the voice. Can you enhance it?" I never saw myself as someone who could write, or someone who could express my thoughts through words. She changed that for me. . . . She believed we could all do it. So I literally learned and relearned how to write. It was an incredible experience.

— *Dana Richardson, High School Senior*

Because of haphazard policies and back-door hiring, many people who teach have had no training at all, and those who do go through schools of education receive very different preparation. Some states require a degree in the discipline to be taught, extensive education coursework, and practice teaching, and a master's degree for a continuing license. Others require less than a college minor in a subject area, a few weeks of student teaching, and a couple of methods courses.

Because most states do not require schools of education to be accredited,[40] only about 500 of the nation's 1,200 education schools have met common professional standards. States, meanwhile, routinely approve all of their teacher education programs, including those that lack qualified faculty and are out of touch with new knowledge about teaching. There often are political incentives to do so, since these programs provide extra revenue to fund other departments and schools.[41] Then, rather than requiring candidates to pass common performance standards, states ask schools of education to recommend their own students for a license. Thus, a weak school of education that could not itself receive accreditation is asked to recommend for a license candidates who also have not met professional standards.

While states recently have begun to require some form of testing for a teaching license, most are little more than multiple-choice tests of basic skills and general knowledge, widely criticized by educators and experts as woefully inadequate to measure teaching skill.[42] Furthermore, in many states the cutoff scores are so low there is no effective standard for entry. Although these tests may be better than nothing, they fall short of what is needed to adequately sort those who can teach from those who cannot, and to send a clear signal to schools of education about what teachers need to know and be able to do.

Finally, until recently, teaching has not had a body of accomplished teachers charged with setting standards for professional practice like those that govern other professions. The bottom line is that, across the country, there has been no foundation of common expectations for what teachers must know before children are entrusted to their care.

When people seek help from doctors, lawyers, accountants, or architects, they rely on the unseen work of a three-legged stool supporting professional competence: accreditation, licensing, and certification. In most professions, candidates must graduate from an accredited professional school that provides up-to-date knowledge and effective training experiences in order to sit for state licensing examinations that test their knowledge and skill. These tests ensure that candidates have acquired the knowledge they need to practice responsibly.

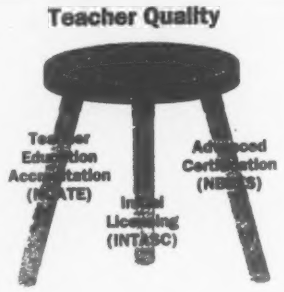
In addition, many professions offer examinations leading to recognition for advanced levels of skill—such as certification for public accountants who earn a CPA; board certification for doctors in areas like surgery, pediatrics, or oncology; or registration for architects. This recognition takes extra years of study and prac-

The Three-Legged Stool of Teacher Quality

The three-legged stool of quality assurance—teacher education program accreditation, initial teacher licensing, and advanced professional certification—is becoming more sturdy as a continuum of standards has been developed to guide teacher learning across the career. When these standards have been enacted in policy, teacher preparation and professional development should be focused on a set of shared knowledge, skills, and commitments.

Accreditation: A rigorous new set of standards for teacher preparation programs has been developed by the National Council for Accreditation of Teacher Education (NCATE). NCATE-accredited institutions must show how they prepare teachers to teach to the student standards developed by professional associations such as the National Council of Teachers of Mathematics, one of NCATE's 30 professional organization members. They also must show how they prepare teachers to meet new licensing standards (see below) regarding content knowledge and skill in curriculum planning, assessment, classroom management, teaching strategies for diverse learners, and collaboration with parents and colleagues. To date, about 500 of 1,200 teacher education programs have received professional accreditation through NCATE.

Licensing: Under the auspices of the Council of Chief State School Officers, a consortium of more than 30 states and professional organizations has formed the Interstate New Teacher Assessment and Support Consortium (INTASC). This consortium has created a set of performance standards for beginning teacher licensing and is developing new examinations that measure these standards. The new examinations draw upon the pace-setting work of the National Board for Professional Teaching Standards (see below) and evaluate teaching in terms of how well teachers can plan and teach for understanding, connect their lessons to students' prior knowledge and experiences, help students who are not initially successful, analyze the results of their practice on student learning, and adjust it accordingly. If new teachers can do these things, they will be prepared to teach for the new student standards that are emerging and to develop the more advanced skills of a Board-Certified teacher.


Teacher Quality
Teacher Education Accreditation (NCATE)
Initial Licensing (INTASC)
Advanced Certification (NBPTS)

Certification: The National Board for Professional Teaching Standards was instituted in 1987 to establish rigorous standards and assessments for certifying accomplished teaching. A majority of the Board's 63 members are outstanding classroom teachers; the remaining members include school board members, governors, legislators, administrators, and teacher educators. Expert, veteran teachers who participate in the Board's assessments complete a year-long portfolio that illustrates their teaching through lesson plans, samples of student work over time, videotapes, and analyses of their teaching. They also take tests of content knowledge and pedagogical knowledge that tap their ability to create and evaluate curriculum materials and teaching situations. The Board's standards are being used by some school districts to guide ongoing professional development and evaluation as well as certification of accomplished practice.

The Commission recommends that this framework be used to guide education policy across the states so that every teacher prepares at an NCATE-accredited institution, demonstrates teaching competence as defined by INTASC standards for initial licensing, and pursues accomplished practice as defined by the National Board for Professional Teaching Standards.

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tice and is based on rigorous performance tests that measure the highest standards of competence. Those who have met these standards are then allowed to do certain kinds of work that others cannot. The standards are also used to ensure that professional schools incorporate new knowledge into their courses and to guide professional development and evaluation throughout the career. Thus, these advanced standards act as an engine that pulls along the knowledge base of the entire profession.

This three-legged stool finally exists for teaching as well. High-quality, coherent standards for accreditation, licensing, and advanced certification now exist and could become a powerful lever for change.

- A National Board for Professional Teaching Standards (hereafter referred to as the National Board) was established in 1987 to define standards for advanced certification of accomplished veteran teachers. The National Board began offering assessments in 1994 and had certified 374 teachers as of June 1996. In some districts these teachers receive extra pay and qualify to become mentors or lead teachers. A number of districts are incorporating the National Board's standards into ongoing professional development and evaluation for teachers.

What's Important about Standards: A Teacher's View

When I was asked by the National Board for Professional Teaching Standards to serve on a committee to write the Early Adolescence/English Language Arts Standards, I was concerned about the sensibility and feasibility of such a daunting task. Standards for all language arts teachers? Impossible, I thought. No one could reach consensus. Nor should they, I believed. However, I agreed to attend the first meeting for a number of reasons: to listen in on the conversation, to see what it was we each valued, and to see if the National Board was serious about giving teachers voice. If they weren't, I would resign. I decided to stay.

I stayed, too, because during the three years that it took us to describe what accomplished teachers know and are able to do, I learned that the journey was far more important than the final destination. The discussion, sometimes arguments, around the table always sent me back to my classroom a better teacher. The endeavor of creating standards allowed me to participate in a professional conversation with other educators. We are seldom given the time for such conversations in our own schools. I left those meetings questioning what I do, why I do what I do, and how well I do those things.

In a scene from *Stuart Little*, Stuart volunteers to fill in as a substitute teacher. He asks the students, "How many of you know what's important?" The standards document is an attempt to answer *what is important* that language arts teachers know and are able to do. It is a draft of our best thinking at the moment. It is a guide, meant to be a living, breathing, evolving document that allows for flexibility, diversity, and growth.

We need the finest language arts teachers to stay in the classroom so they can help students become the most articulate readers, writers, and speakers they can be. Perhaps this certification process will keep teachers intellectually challenged and learning for life. Perhaps [it] will teach all educators, and others outside the profession, that continually questioning and searching fo what is important is more valuable than having all of the answers.

— *LINDA RIEF, MIDDLE SCHOOL TEACHER*
DURHAM, NEW HAMPSHIR

Adapted from Linda Reif, "Message from the Editors," *Voices from the Middle* 2, no. 4 (November 1995): 1. Copyright © 1995 by the National Council of Teachers of English. Reprinted with permission.

- A consortium of more than 30 states and professional associations—the Interstate New Teacher Assessment and Support Consortium (INTASC)—has begun to develop National Board-compatible licensing standards and performance examinations for beginning teachers as they enter the profession.

- The National Council for Accreditation of Teacher Education (NCATE) has developed a rigorous set of standards linked to those of the National Board and INTASC to hold schools of education and their programs accountable.

Here, as with standards for students, the profession is on the cusp of serious reform. These standards, however, have yet to be embedded in most state and district policies where they could influence who enters and remains in classrooms, how they are prepared, and how they teach. The critical issue for improving the caliber of teaching is creating a viable system for using standards to guide teacher learning and create accountability.

Major Flaws in Teacher Preparation

Much has changed in the world around schools: Students, family life, the economy, expectations for learning, and the job of teaching are all different than they once were. However, the ways in which teachers prepare for their work are, in most places, still very much unchanged from two or three decades ago.

For new teachers, improving standards begins with teacher preparation. Prospective teachers learn just as other students do: by studying, practicing, and reflecting; by collaborating with others; by looking closely at students and their work; and by sharing what they see. For prospective teachers, this kind of learning cannot occur in college classrooms divorced from schools or in schools divorced from current research.

Yet, until recently, most teacher education programs taught theory separately from application. Teachers were taught to teach in lecture halls from texts and teachers who frequently had not themselves ever practiced what they were teaching. Students' courses on subject matter were disconnected from their courses on teaching methods, which were in turn disconnected from their courses on learning and development. They often encountered entirely different ideas in their student teaching, which made up a tiny taste of practice added on, without connections, to the end of their coursework. When they entered their own classrooms, they could remember and apply little of what they had learned by reading in isolation from practice. Thus, they reverted to what they knew best: the way they themselves had been taught. Breaking this cycle requires educating teachers in partnerships with schools that are becoming exemplars of what is possible rather than mired in what has been.

Long-standing problems with traditional teacher education programs have been widely documented in recent years.[43] Difficulties include:

In a world that has changed, education schools, too, must change. . . . Academic demands have risen and instructional strategies must be adjusted to fresh realities. Research in education and the cognitive sciences sheds new light on ways to improve student learning and understanding. Those who go into the public schools to make their careers must know how to provide the best possible education to a cross-section of children who personify a new America.

— *The Holmes Group*

- **Inadequate Time.** The confines of a four-year undergraduate degree make it hard to learn subject matter, child development, learning theory, and effective teaching strategies. Elementary preparation is considered weak in subject matter; secondary preparation, in knowledge of learning and learners.
- **Fragmentation.** Key elements of teacher learning are disconnected from each other. Coursework is separate from practice teaching; professional skills are segmented into separate courses; faculties in the arts and sciences are insulated from education professors. Would-be teachers are left to their own devices to put it all together.
- **Uninspired Teaching Methods.** For prospective teachers to learn active, hands-on and minds-on teaching, they must have experienced it for themselves. But traditional lecture and recitation still dominates in much of higher education, where faculty do not practice what they preach.
- **Superficial Curriculum.** "Once over lightly" describes the curriculum. Traditional programs focus on subject matter methods and a smattering of educational psychology. Candidates do not learn deeply about how to understand and handle real problems of practice.
- **Traditional Views of Schooling.** Because of pressures to prepare candidates for schools as they are, most prospective teachers learn to work in isolation, rather than in teams, and to master chalkboards and textbooks instead of computers and CD-ROMs.

The absence of powerful teacher education is particularly problematic at a time when the nature of teaching needs to change—and when those entering may never themselves have experienced the kind of challenging instruction they are expected to offer. It is difficult to improve practice if new teachers teach as they were taught and if the way they were taught is not what we want. As one analyst explains:

> [The] improvement of practice problem . . . [is] very serious. We are caught in a vicious circle of mediocre practice modeled after mediocre practice, of trivialized knowlege begetting more trivialized knowledge. Unless we find a way out of this circle, we will continue re-creating generations of teachers who re-create generations of students who are not prepared for the technological society we are becoming.[44]

Both in the United States and abroad, many efforts are under way to deal with these challenges. Countries like Germany, Luxembourg, and Belgium have long had systems in which teachers earn an undergraduate degree in a discipline (sometimes two) and then pursue two to three more years of graduate-level education studies that include an intensive teaching internship in schools. Examinations of subject matter and teaching knowledge occur throughout this process. Since the 1980s, reforms in France, Japan, Taiwan, and elsewhere have begun to follow suit: encouraging or requiring teacher education at the graduate level and adding yearlong internships in which teachers combine coursework and on-the-job practice under careful supervision by veteran teachers.

In the United States, about 300 colleges have created graduate-level teacher education programs that allow for more extended clinical training. These efforts have focused on transforming curriculum to address the demands of teaching for greater understanding and teaching a more diverse student population, and

Learning to Teach in Germany, France, and Japan

Teacher education in the former West Germany has long been considered an international flagship. As one report noted of the system's rigorous standards and training, "In Germany, those who can, teach." Prospective teachers get degrees in two subjects, write a thesis, and pass a series of essay and oral exams before they undertake pedagogical training. Two years of teaching preparation include teaching seminars combined with classroom experience—first observing and then, after four to six weeks, beginning to practice in a classroom with a mentor teacher. Over the two years of internship, college and school-based supervisors observe and grade at least 25 lessons. At the end of this period, candidates prepare, teach, and evaluate a series of lessons, prepare a curriculum analysis, and undergo another set of exams before, finally, they are ready to teach.

In 1989, France undertook a sweeping overhaul of teacher education, motivated by a conviction that both elementary and secondary teachers needed to understand subject matter disciplines and pedagogy more fully if their students were ultimately to succeed at more challenging kinds of learning. Now, after completing an undergraduate degree, would-be teachers apply for a highly selective two-year graduate program in a new University Institute for the Preparation of Teachers. There they learn about teaching methods, curriculum design, learning theory, and child development while they conduct research and practice teaching in affiliated schools. Teachers are supported in their studies by government stipends, and they receive a salary in their final year of training, during which they take on a teaching position under supervision, much as a doctor does in a residency.

Japan also launched major reforms of teacher education in 1989. The changes place more emphasis on graduate-level teacher education and add an intensive one-year internship to university training in education. After passing a highly competitive teacher appointment examination, beginning teachers are assigned to a school where they work with a master teacher who is released from his or her classroom to advise and counsel interns. Master teachers observe each intern's class weekly and give the intern the opportunity to observe the classes of other teachers. These observations are especially helpful to beginning teachers like Kenji Yamota, who observed that "only after I try what I observe do I begin to think." First-year novices also participate in retreats, seminars, training sessions, and 60 days of in-school professional development on topics such as classroom management, computer use, teaching strategies, and counseling methods.

Kenji also values what he learns informally from his colleagues. Each teacher has a desk in a shared staff room, and the desks are grouped to promote interaction. New teachers are placed next to veterans in their grade level. Every morning teachers hold a brief meeting in the staff room and return later in the day to work and relax. Once a week, they share an extended block of time for demonstrations, lesson planning, and other joint work. Learning to teach is considered a lifelong task that is well-supported throughout the career.

Sources: John Holyoake, "Initial Teacher Training: The French View," *Journal of Education for Teaching* 19 (1993): 215-226; Nancy Sato and Milbrey W. McLaughlin, "Context Matters: Teaching in Japan and in the United States," *Phi Delta Kappan* 66 (1992): 359-366; Nobuo K. Shimahara and Akira Sakai, *Learning to Teach in Two Cultures: Japan and the United States* (New York: Garland Publishing, 1995); and T. Waldrop, "Before You Lead a German Class, You Really Must Know Your Stuff," *Newsweek* 118 (December 1991): 62-93.

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on integrating theory and practice by creating new professional development school (PDS) partnerships with schools that exhibit state-of-the-art practice. Professional development schools serve as sites for student teaching and internships for preservice teachers where practice can be linked to coursework. They also create long-term relationships that allow university and school faculties to work out common programs of teacher preparation and ongoing professional development.

These new programs and partnerships have the potential to reinvent teacher education just as the development of extended medical education and the creation of teaching hospitals transformed medical education following the advice of the Flexner Report in 1910.[45] But they are fragile, as many exist on soft money and as exceptions to current policies, and the preponderance of teacher education practice has not yet changed. Thus far, only a few states, such as Minnesota and Ohio, have taken steps to actively support substantially restructured training for teachers that would include extended internships or residencies in professional development schools.

Slipshod Recruitment

Many problems that undermine the creation of a strong teaching force are the product of mismanaged, uncoordinated systems that create snafus and inefficiencies at every possible turn. There is no way to comprehend what a hopelessly wasteful system of teacher preparation and recruitment we have in place without some understanding of how new teachers are prepared, hired, and introduced to the profession. All along the way, systems passively receive those who come to them rather than aggressively recruiting those who should apply; then they treat promising candidates with abandon, losing many along the way.

The first sieve is the pathway through traditional undergraduate teacher education, which many candidates enter not because they are committed to teaching but because getting a teaching credential seems like good job insurance. According to one estimate, of 600 students who enter a large four-year teacher education program early in their college years, only 180 complete the program and only about 72 actually get placed in teaching jobs. Of these, only about 30 or 40 remain in the profession several years later.[46] National data indicate an overall attrition rate of about 75% along the pipeline from the beginning of undergraduate teacher education through about the third year in teaching: About 60% of those who start out in undergraduate teacher educatio programs complete them; of these, about 60% enter teaching in the next year of these, about 70% stay for more than three years.[47] Although graduate programs are more successful at placing and keeping recruits in teaching, they ar still the exception to the rule.

Then there is the tortuous process of landing a teaching job. Especially large districts, public school hiring practices are a case study of systems so co sumed with procedures and paperwork that they forget what they are trying do. A RAND Corporation study found that many districts do not hire the be

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The Cincinnati Initiative for Teacher Education (CITE)

"What better way to prepare for your first year of teaching? Classroom management is stressed all through school by the professors, but no matter what people tell you, you just have to *do* it. Had I been a first-year teacher at a school without this support, I would have been lost."

— Prospective teacher Janet Barnes during her fifth-year teaching internship at Shroder Paideia Middle School, a CITE professional practice school

Janet Barnes's experience as a graduate student intern in Debbie Liberi's eighth-grade science class was entirely different than the one her mentor had had entering teaching many years earlier. In addition to the fact that Janet is learning in a collaborative team setting in a professional practice school, Liberi recalls that "eighteen years ago I was unique among my peers because I had mentors within the building as a first-year teacher. But many of my contemporaries quit after a year or two. . . . This, I think, is a much better setup."

Janet's experience is an outgrowth of the efforts of a group of faculty from the University of Cincinnati and the Cincinnati public schools who sat down one afternoon in 1987 to figure out how to "redo" teacher education. Their goal: to define what makes an effective teacher and to design a process that would prepare such teachers. Their conclusion: The standard model of preparation would need major overhaul to provide graduates with much more than a bit of subject matter knowledge and the hint of an educational philosophy. To ensure that teachers would be prepared to teach diverse students for understanding, they created a new program that includes:

- *Two degrees, two majors.* Teachers receive a bachelor's degree in their discipline as well as a bachelor's degree in education to ensure a solid intellectual grasp of both.

- *A fifth-year internship.* A full-year internship combines half-time teaching responsibility with coordinated seminars under the joint supervision of campus- and school-based faculty.

- *Professional practice schools.* A group of professional practice schools with a shared vision work with the university to provide the settings for students' fieldwork assignments and internship placements.

Students conduct observations, fieldwork, and tutoring in professional practice schools beginning in their second year. During the fifth year, they are assigned and paid as half-time "intern" teachers working with experienced lead teachers in professional teams. The teams include other teachers, school-based university faculty, and fellow interns, who usually number six or eight to a building.

Hays Elementary School principal Mary Martin sees many benefits to this approach:

> I see it as a vehicle for getting new strategies and ideas into the building, which will be shared with Hays teachers, who have much to share in turn with the interns. The ultimate good, of course, is that we're helping Cincinnati public schools to pull in better-trained, qualified teachers, with more realistic outlooks on the total educational picture.

Teacher union president Tom Mooney adds that CITE makes "teacher training a clinical, field-based, reality-centered experience . . . and brings practicing teachers and education faculty into new working relationships." Superintendent Michael Brandt concurs that CITE's internship gives prospective teachers "exposure to real life in the classroom before they are launched on their own." As a growing number of CITE graduates are hired, the result for the district is "better trained teachers and better educated students," Brandt says.

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qualified applicants for teaching positions because their own procedures keep them from doing so. Critical problems include uncoordinated recruitment, cumbersome screening processes that create bottlenecks, unprofessional treatment of applicants, hiring decisions delayed until the school year starts, teacher assignment and transfer policies, and obstacles to teacher mobility such as salary caps for veteran teachers, lack of licensing reciprocity among states, and the inability to transfer pension benefits from state to state.[48]

In large districts, logistics can overwhelm everything else. It may take until midsummer for principals to confirm vacancies or for school district officials to hear of them. Teachers who are retiring often delay notifying the principal or district of their plans. Where transferring teachers must be placed before new teachers can be hired, the entire hiring process is delayed. Lacking funds to computerize their systems, many central offices still keep candidate data in file folders that are frequently misplaced and that prevent applicants from being considered for more than one vacancy at a time. In the Information Age, it is sometimes the case that central offices cannot find out about vacancies, principals are left in the dark about applicants, and candidates cannot get any information at all.

Before its recent overhaul, Fairfax County, Virginia, found that its largely unautomated 64-step process added delays and reduced its ability to hire the best-qualified candidates.[49] In gargantuan districts like New York City, Los Angeles, and Chicago, thousands of qualified candidates who want to teach have had to take jobs elsewhere because they encountered unending problems in the system's procedures and could not even get interviews until the school year had already started.

Districts in states and cities that do not have a timely budget process also suffer from the fact that they may not know how many candidates they can hire until late summer. Budget battles have caused many cities to dismiss hundreds of teachers each spring, only to scramble to rehire them in the fall when many have gone on to other jobs. Wild pendulum swings from layoffs to hundreds of unfilled vacancies are a way of life in many such districts.

Finally, studies have found that some districts hire unqualified teachers for reasons other than shortages, including occasional out-and-out patronage; a desire to save money on salaries by hiring low-cost recruits over those that are better qualified; and beliefs that more-qualified teachers are more likely to leave and less likely to take orders.[50] When these and other new teachers leave in frustration because they are underprepared for teaching and undersupported by the current induction practices, the hiring scramble begins all over again.

Much of the problem of teacher supply is a problem of distribution that could be solved with more thoughtful and coherent policies. While there are shortages of qualified candidates in particular fields (e.g., mathematics and science) and particular locations (primarily inner city and rural), the nation each year produces more new teachers than it needs. While some school districts cannot find the applicants they need, others have long waiting lists of qualified teachers eager for work. Some states routinely export their surplus teachers; others scramble to import them. Thousands of teachers fail to make the transition

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imming Upstream in New York City: What Does It Take to Get Hired?

as the most insensitive, discourag- incomprehensible process I have experienced," says Lori Chajet of yearlong quest to get a teaching job ew York City. It was only because she s extraordinarily persevering that jet, a Brown University graduate with master's in education from Teachers llege, Columbia University, survived e bureaucratic obstacle course that eated many others.

Despite the fact that New York has tinuing high demand for teachers frequent shortages, well-prepared chers are discouraged from applying jobs. Chajet was advised to start the cess of getting a file number even fore she started her preparation program. Then followed countless attempts to speak to someone at the New York City Board of Education by phone, waiting weeks just to receive the wrong forms, and several hourlong train trips to Brooklyn to hand-deliver documents. Just getting a file number required five different processes—initial check-in and registration, fingerprinting, a physical checkup, a transcript review, and an oral interview—some requiring separate processing fees payable only by individual postal money orders.

This experience was shared by most recruits studied by New York's Education Priorities Panel, which recommended after its two-year study that the city hiring system be scrapped. "I had to file the same exact papers four times," reported one teacher. "They'd send me letters that something wasn't right and I'd have to go back in person." Another reported, "I've had my fingerprints taken five times and paid for it each time. What do they do with those records? I took the TPD [Temporary Per Diem] test for regular education and special education. I took the NTE [National Teachers Examination] and passed all three parts. I took all my education credits." What does it take to be a teacher? The panel found that fewer than 10% of the city's new teachers actually made it through the certification process in one piece.

Chajet persevered through similar travails—including the inexplicable return, after three months, of her unprocessed application for a license—only to find that she would not even know what vacancies were available until late August. "I was stunned. I couldn't believe that this was the process that they expected all beginning teachers to go through—a whole summer of not knowing to just start teaching in a whole new environment as the kids arrive. How could I spend the summer planning and preparing without knowing who and where I'd be teaching?"

By this time Chajet, an Ivy League graduate with a master's degree, felt that her chances of teaching were as good as the next person on the street. Finally, after a long roller coaster of a summer, she landed a job from a school that she had visited earlier in the spring—though not without additional paperwork and trips to the Board of Education and the local district office to become officially hired. She recalls one of these visits when after waiting in line she was told, "I'm sorry, you're just not important enough right now." Chajet feels much more appreciated now that she is a full-time teacher, but notes that the daily demands of classroom teaching are nothing compared with the frustrations of New York City's hiring process.

Not everyone is able to endure. When Harvard graduate Tracy Seckler, also armed with a master's degree in teaching from Columbia, sent out dozens of letters and résumés to New York City schools in April, she found that she would have to wait until after Labor Day to even learn of vacancies. Determined to teach, she felt she had to look elsewhere. Outside the bureaucratic entanglements of New York City, she found personalized treatment, well-organized early hiring procedures, and attention to teacher quality in affluent suburban Scarsdale, New York. "While I was getting busy phone signals from the New York City Board of Education," Seckler recalls, "Scarsdale's personnel office was calling me with different possibilities for scheduling an interview." She was impressed that teachers, parents, and principals participated in her interview, and that she was asked insightful questions about teaching and her philosophy of education rather than about course credits and money orders.

Of her move to Scarsdale, Seckler says, "I never intended to teach anyplace other than New York, but the possibility of beginning teaching with no opportunity to visit the school, see the kids, or talk with the teachers began to look completely unappealing." In May, while Chajet was still waiting in line at the New York City Board of Education, Seckler was offered and accepted a job teaching kindergarten for the following year. By June she was meeting with her future students and colleagues and planning with excitement for her first class of students.

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from the places they were prepared to the places where the jobs are due to lack of information about where to apply, lack of reciprocity in licensing between states, and ridiculously cumbersome application procedures.

Second, districts frequently ignore existing entry standards in hiring, either because they do not believe existing standards are meaningful or because the pressure to put a teacher—any teacher—in the classroom is overpowering, especially as Labor Day approaches and many districts finally get around to hiring. Faced with the option of classrooms full of students and no teachers or unqualified "teachers" in classrooms, some districts choose unqualified teachers without a second's hesitation.

Another option—creating more proactive and streamlined recruitment and hiring systems—is frequently not considered. As a result, funds are wasted on the training of many who do not enter or stay in teaching; many would-be teachers cannot find jobs while unqualified entrants are hired; and many teachers are placed outside the subject areas in which they were prepared.

Some problems, however, are national in scope and require special attention: There is no coordinated system for helping colleges decide how many teachers in which fields should be prepared or where they will be needed. Neither is there regular support of the kind long provided in medicine to recruit teachers for high-need fields and locations.[14] Critical areas like mathematics and science have long had shortages of qualified teachers that were only temporarily solved by federal recruitment incentives during the post-Sputnik years. Currently, more than 40% of math teachers and 30% of science teachers are not fully qualified

Slipshod Recruitment

Sabrina Vaught was shocked by what she learned about teacher hiring in her first teaching stint. Sabrina entered Teach for America (TFA) after a year of teaching high school English in Korea. She had hoped to teach high school in a high-need area, but was placed in a Louisiana elementary school. Sabrina was appalled to learn, after the fact, that the TFA interviewer had decided she should not teach high school because of her "petite frame and high-pitched voice" and that the district personnel director selected her to teach kindergarten "because I looked from my picture like I would be a good kindergarten teacher."

Vaught was troubled about going into an elementary classroom after only a few weeks of training. But, she says, "I'd promised to do this. I was still under the impression that there was a classroom of kids that wasn't going to have a teacher and they were waiting for me, and if I didn't go they would have subs that would change every two days."

Within two months, Sabrina had decided to leave teaching and enter a school of education. "I had a lot of kids who were frustrated and I was frustrated because I wanted to help them and didn't have the training to do that." A car accident clinched her decision. Before leaving, however, she met an experienced certified teacher whom she learned had initially applied for her job. Sabrina was amazed by what she found. "Here we were supposed to be teaching in shortage areas, and this woman had ten years of teaching experience in elementary education. Of course she was going to cost several thousand dollars more a year so they didn't hire her. She went to teach in [the all-white] private school," while Sabrina was hired to teach in the nearly all-black public school. When Sabrina left, her principal hired a certified replacement that afternoon. "That was troubling to me, too," Sabrina confessed, "because then I thought, 'What was I doing?'" She had never imagined that "teacher shortages are defined by money, rather than by lack of qualified people."

for their assignments.[32] Studies show that unqualified teachers produce lower levels of learning for their students,[33] and that, compared with other nations, United States students are less well taught in science and mathematics throughout the grades.[34] In addition, many schools cannot offer advanced courses in these fields because they lack teachers who can teach them.

Well-prepared urban teachers and teachers of color are in short supply as well. While nearly one-third of today's students are members of minority groups, the number of teachers of color declined sharply during the 1980s and has only recently climbed to 13% of the teaching force.[35] With the exception of candidates of color, most would-be teachers hope to return to the suburbs and small towns where they grew up. They do not plan to teach in central cities, even though that is where most jobs are.[36] Little is being done to counteract these trends. Since the successful federal recruitment programs of the 1970s ended, only a few states have created supports in the form of scholarships or loans to prepare teachers for high-need areas and fields.

Simply streamlining and rationalizing the processes of teacher recruitment, hiring, and induction, as some states and districts have done, would go a long way toward putting qualified teachers in every classroom. In addition, investing once again in the targeted recruitment and preparation of teachers for high-need fields and locations is a national need. It should also be stressed that large pools of potential midcareer teacher entrants are available, and highly successful programs have been created in many colleges for preparing them to teach. What we need now is the energy and imagination to exploit, on a nationwide scale, the reservoirs of talent that could be turned to teaching from downsizing corporations, military and government retirees, recent graduates, and teacher aides already in the schools.

New Teachers Sink or Swim

Of all of education's self-inflicted wounds, the continued tolerance for extraordinary turnover among new teachers is among the most remarkable. Chronic, high rates of teacher replacement—particularly for teachers in the first two or three years of their careers and particularly in urban school districts—increase the pressure on teacher recruitment and initial placement systems incessantly. This pressure is particularly severe during times of high demand like the one we are now entering, because beginning teachers will be hired in ever greater numbers, and unless conditions change, they will leave much more rapidly than older teachers do.

Turnover in the first few years is particularly high because new teachers are typically given the most challenging teaching assignments and left to sink or swim with little or no support. They are often placed in the most disadvantaged schools and assigned the most difficult-to-teach students, with the greatest number of class preparations (many of them outside their field of expertise) and a slew of extracurricular duties. With no mentoring or support for these teachers, it is little wonder that so many give up before they have really learned to teach. Alone in their classrooms, without access to colleagues for problem solving or role modeling, discouragement can easily set in.

In the past, people thought that whatever teachers needed to know could be acquired quickly and prior to entering a classroom. Once a teacher received a license to teach, he or she was considered ready for practice, in need of no more help. Early in the nation's educational history there may have been some justification for this belief; today there is none. The weight of accumulated evidence clearly shows that traditional sink-or-swim induction contributes to high attrition and to lower levels of teacher effectiveness.[57]

The kinds of supervised internships or residencies regularly provided for new entrants in other professions—architects, psychologists, nurses, doctors, engineers—are rare in teaching, but they have proven to be quite effective where they exist. Beginning teachers who receive mentoring focus on student learning much sooner; they become more effective as teachers because they are learning from guided practice rather than trial-and-error; and they leave teaching at much lower rates.[58] A study of California teachers found that the combination of high-quality, university-based teacher education followed by first-year mentoring produced teachers who were substantially more effective than those who received either university-based training or first-year mentoring alone.[59]

Many other countries have highly developed mentoring and induction programs following teacher education to help novice teachers in their first years on the job. States like Connecticut and districts like Toledo, Cincinnati, Columbus, Rochester, and Seattle have developed programs to support new teachers, often in partnership with unions and universities. The best of these efforts involve beginners in yearlong internships at "professional development schools" before they are hired, at which point they are assigned to an experienced mentor who works intensively with them during their first year of teaching.

Although some states have created programs for new teacher induction, few have maintained the commitment required. With a few exceptions, initiatives during the 1980s focused on evaluation and failed to fund mentoring.[60] Others provided mentoring that reached only a few eligible teachers or withered as funds evaporated. Again, the problem is not that we don't know how to support beginning teachers; it is that we have not yet developed the commitment to do so routinely.

Lack of Supports or Rewards for Knowledge and Skill

In addition to the lack of support for beginning teachers, most U.S. school districts invest little in ongoing professional development for experienced teachers and spend much of these limited resources on unproductive practices. Estimates of professional development support range from only 1% to 3% of district operating budgets, even when the costs of staff time are factored in.[61] Even the most generous estimates, however, are paltry compared with the expenditures invested in employee development in leading corporations and in other countries' schools.[62]

In addition, district staff development is still characterized by one-shot workshops that have very little effect on practice, rather than more effective approaches that are linked to concrete problems of practice and built into teachers' ongoing work with their colleagues. These workshops tend to offer ideas for classroom management or teaching that are not tied to specific subject areas or problems of practice, that do not offer follow-up help for implementation, and that are replaced at the next workshop with another idea—the new "flavor of the month"—offering little continuity in building practice. These offerings often bear little relation to what teachers want to study. Two-thirds of teachers report that they have no say in what or how they learn on the job.[63] As one New York teacher commented of his frustration with his district's top-down approach to managing staff development: "They're offering me stress reduction workshops when I need to learn how to help students meet these new standards. My stress comes from not having the tools to help my students succeed!"

I appreciate staff development, but sometimes it doesn't seem well planned. For example, we have designated work days without students, but along comes a consultant with an instructional game that we already know, but we have to spend time learning it again. We feel stressed because there are things we need to get done, but we won't have time.

— *Alvarez Anderson,*

French teacher, C. E. Murray High School,

Greeleyville, South Carolina

Most U.S. teachers have almost no regular time to consult together or learn about new teaching strategies, unlike their peers in many European and Asian countries where teachers have substantial time to plan and study with one another. In Germany, Japan, and China, for example, teachers spend between 15 and 20 hours per week working with colleagues on developing curriculum, counseling students, and pursuing their own learning. They regularly visit and observe other schools and classrooms, attend seminars provided by university faculty and other teachers, conduct group research projects, and participate in teacher-led study groups.[64]

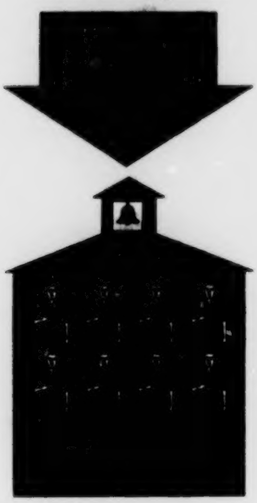
Teachers in these countries generally share a work room in which they spend breaks throughout the day and meet regularly to work on curriculum, assessment, and school management together. Japanese and Chinese teachers offer demonstration lessons to each other, discussing the nuances of specific concepts, how they might be presented, what kinds of questions students might have, and what kinds of questions teachers should ask to elicit student interest.[65] Researchers have noted that class lessons in these countries are extraordinarily well crafted because of teachers' systematic efforts to work together to perfect their practice.[66] German teachers hold "curriculum conferences" within the school to develop materials and look at student work. They also work together on committees examining curriculum, assessment, and other schoolwide matters.[67] The result is a rich environment for continuous learning about teaching and the needs of students.

Instead of these ongoing learning opportunities, U.S. teachers get a few brief workshops offering packaged prescriptions from outside consultants on "in-service days" that contribute little to deepening their subject knowledge or teaching skills. Difficult problems of teaching and learning—"How can I explain quadratic equations?" "Why doesn't Ellen understand what she reads?"—are never discussed in these contexts. While teachers are being asked to engage their own students in active learning, problem solving, and inquiry, they rarely experience this kind of learning themselves. As one longtime student of staff development notes of current practice:

> A good deal of what passes for "professional development" in schools is a joke—one that we'd laugh at if we weren't trying to keep from crying.

> **In a time when so many advocate for restructured schools, for greater decision autonomy for teachers, and for connecting the schools more intimately with homes and communities, it is more important than ever that teachers have the capacity to appraise their actions, evaluate their work, anticipate and control consequences, incorporate new theory and research into practice, and possess the skills and understanding needed to explain their work to other teachers, and to students and their parents. . . . These reflective capacities are not innate to human beings, nor are they acquired quickly. They are not acquired during a planning period sandwiched somewhere in between classes, or during evening "mini-courses" after a full day's work. They are, rather, the outcome of sustained and rigorous study, and of dialogue and exchange with master teacher educators.**
>
> — *Gary Fenstermacher, Professor of Education*

Historical View of Teacher Development



> It's everything that a learning environment shouldn't be: radically under-resourced, brief, not sustained, designed for 'one-size-fits-all,' imposed rather than owned, lacking intellectual coherence, treated as a special add-on event rather than as part of a natural process, and trapped in the constraints of the bureaucratic system we have come to call "school." In short, it's pedagogically naive, a demeaning exercise that often leaves its participants more cynical and no more knowledgeable, skilled, or committed than before.[44]

As we describe later, more productive strategies have begun to emerge in some school districts where teachers are involved in ongoing networks and partnerships that reflect their teaching concerns. Teacher networks allow teachers in many school districts to work with one another over time on issues of subject matter teaching. School-to-school networks help educators work together on schoolwide change. School-university partnerships provide forums for study groups and school-based research on issues of immediate concern. Teacher academies provide sites for shared problem solving, exchanges of teaching ideas, and intensive institutes. Engaging in new teacher assessments provides teachers with another vehicle for deepening their learning.

Unlike old approaches that see professional development as delivering simple recipes to teachers working in isolation, these new approaches connect teachers to one another through in-school teams and cross-school professional communities that tackle problems of practice over time. Though different in

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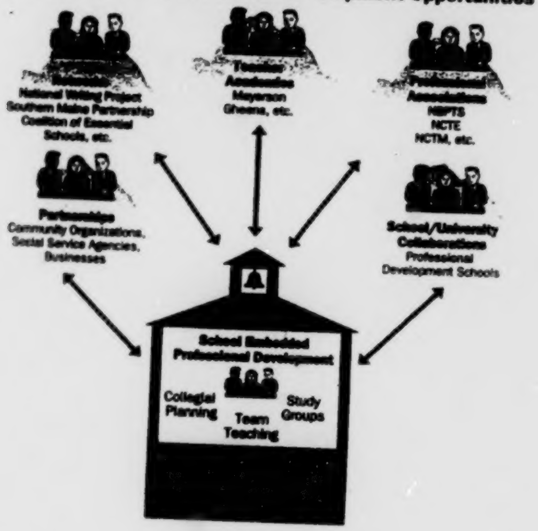
A Map of Current Professional Development Opportunities


Networks
National Writing Project
Southern Maine Partnership
Coalition of Essential Schools, etc.
Teacher Academies
Mayerson
Gheens, etc.
Professional Associations
NBPTS
NCTE
NCTM, etc.
Partnerships
Community Organizations,
Social Service Agencies,
Businesses
School/University Collaborations
Professional Development Schools
School Embedded Professional Development
Collegial Planning
Team Teaching
Study Groups

some respects, all of these approaches share certain features. They are:

- Connected to teachers' work with their students;
- Linked to concrete tasks of teaching;
- Organized around problem solving;
- Informed by research;
- Sustained over time by ongoing conversations and coaching.[65]

Over and over again, teachers attest to the usefulness of these kinds of opportunities for transforming their teaching—and to their scarcity in most school settings. Great teachers who are lucky enough to be in places where such opportunities are offered find ways to take advantage of them, usually on their own time and money. But most teachers have little access to this kind of learning, and few incentives to seek it out.

If great teaching is to spread beyond a few pockets of excellence, schools need to think systematically about how to encourage and reward it. As Phillip Schlechty, the president of the Center for Leadership in School Reform, has observed, in most schools the only reward is the lack of punishment. Current incentives in education do not acknowledge outstanding teaching, support teachers in taking

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on the most challenging work, or reward greater knowledge and skill.

There are many ways in which greater knowledge is demeaned in teaching. Novices who enter without preparation are paid at the same levels as those who enter with highly developed skills. Mediocre teachers receive the same rewards as outstanding ones. And unlicensed "teachers" are placed on the same salary schedule as teachers licensed in two or more subjects.

Within teaching, there is a flat career structure that places a low ceiling on lifetime earnings. Entering novices take on exactly the same kind of work as 30-year veterans, with little differentiation based on expertise. All of these incentives maintain a status quo in which ability has little currency, and highly capable people are as likely to be discouraged from entering teaching as they are encouraged to enter and remain.

Current incentives only haphazardly reward learning aimed at better teaching. Monetary incentives take the form of salary increases tied to graduate course-taking, which rewards seat time, not greater effectiveness. Great teachers have few incentives to stay in the profession. In the vast majority of districts, the greatest status accrues to those who work farthest away from children: The only way to advance is to leave the classroom for an administrative job or a specialist position. These jobs not only pull talent out of the classroom where students could benefit directly; they contribute to a proliferation of nonteaching staff that ultimately reduces funds that could buy smaller classes and more teachers.

One tribute to the shortsightedness of the existing system is that it recognizes experience with easier work instead of rewarding senior teachers for tackling difficult learning problems. This has been necessary because there are so few other incentives in the system to retain good teachers. As teachers gain experience, they can look forward to teaching in more affluent schools, working with easier schedules, and dealing with "better" classes. Teachers are rarely given concrete incentives to apply their expertise to the most challenging learning problems or to major system needs.

These problems of career structure and compensation need to be tackled in concert. Only bare-bones improvements in teacher compensation systems can be anticipated unless they are connected more directly to teaching expertise, thus garnering greater public support as well as greater school productivity. Development of a much richer, deeper, broader concept of a true *career* in teaching must be accompanied by incentives for teachers to grow and diversify their skills in ways that help students reach high standards of achievement.

Schools Structured for Failure Instead of Success

One of the management truisms of the 1990s holds that every organization is perfectly organized to produce the results that it gets. Nowhere in American life is this more true than in our schools. On some unconscious level schools tolerate student failure because they mistake it for a commitment to higher standards. Designed to support a very limited kind of learning and a very particular kind of learner, schools only rarely hold themselves responsible for the success of every student. And most are structured in ways that make it impossible for them to do so.

Today's schools are organized in ways that support neither student nor teacher learning well. Like the turn-of-the-century industries they were modeled after—most of which are now redesigning themselves—current school structures were designed to mimic factories that used semiskilled workers to do discrete pieces of work in a mass production assembly line. Thus, teachers' work is divided up and handled individually; students pass by in large groups, conveyor belt-style, to be stamped with a lesson before they move on to the next stop. As bureaucracies have grown from this structure, traditional schools have come to suffer from three major flaws:

1. They use time nonproductively, passing students off from teacher to teacher for short periods of learning, thus making it difficult for them to learn intellectually challenging material or to be well known by school staff.

2. They use staff nonproductively, assigning work in disconnected ways, isolating teachers from one another, and allocating too many people to jobs outside of classrooms. This undermines collective goal setting and problem solving, prevents knowledge sharing, and makes it difficult for anyone to take responsibility for student learning.

3. They use money nonproductively, allocating far too many resources to nonteaching functions and staff. This allocation of resources then makes it difficult to provide teachers with the time and supports they need to do high-quality work.

In addition, information technologies that could enable alternative uses of staff and time are not yet readily available in schools, and few staff are prepared to use them in ways that could optimize teaching and learning for both students and teachers. New technologies could dramatically reshape how schools operate, but most have not yet imagined how technology could empower teachers to teach more effectively as well as to transform administrative tasks, communication with parents, and continuing professional development.

Current structures and traditions make it difficult for schools to create the three conditions that research has consistently found to be the most powerful determinants of both student academic achievement and safe, positive environments:

1. Teacher expertise, including opportunities for ongoing learning;

2. Common, challenging curriculum requirements; and

3. Small school units and classes that are organized to allow teachers to know their students well over time.[39]

The combination of these elements of productive schooling is relatively rare in American school systems. First of all, teachers are generally isolated, working alone rather than in teams, with little or no shared planning time, and pursuing disconnected agendas without a set of common curriculum goals to guide them. This makes it difficult for teachers to share expertise or to get their teaching to "add up" in a cumulative way. Lower-grade teachers have almost no time to share ideas with colleagues. Upper-grade teachers do not share students, so they cannot integrate their work, evaluate student progress, or solve student problems together. Teachers meet infrequently together and have few communication vehicles such as electronic networking to allow them to share information or work more closely together.

Second, teaching and other services are fragmented. Unlike schools in many other countries where teachers often stay with their students for multiple years and multiple subjects, American schools typically pass students off to different teachers for each grade and subject, as well as to other staff for counseling and special programs. Just as teachers begin to know their students reasonably well, they must pass them on to someone else who must start all over again trying to figure out how they learn.

In contrast, Japanese teachers stay with their students for at least two years. As one principal explains, "The first year you look and listen; then in the second year the real learning can begin."[71] German teachers keep the same students for two to four years through tenth grade. A principal who, like most European school heads, also teaches, explains:

Teaching and Technology: Current Barriers

A recent report of the Office of Technology Assessment reveals how far the nation's schools are from becoming technologically supported workplaces for students and teachers:

While schools had 5.8 million computers in 1995 (about one for every nine students), fewer than half of teachers use computers regularly for instruction. Only 19% of classes in English, 7% in math, and 3% in social studies use computers.

Most school computers are already outmoded. In 1994, 85% of the equipment installed in schools could not handle multimedia uses or connect to outside resources. Only 3% of schoolrooms have access to on-line databases.

Sixty percent of instructional areas in schools have no telephone lines, and 87% do not have access to fiber optics or cable. Only one teacher in eight has a telephone in class and fewer than 1% have access to voice mail.

Both access to and use of information technologies are heavily skewed toward higher-income schools. Schools attended by low-income students have fewer computers and are half as likely to have access to the Internet.

Although 18 states now require some technology preparation for a teaching license, only 10% of new teachers in 1994 felt they were prepared to integrate new technologies into their instruction. Fewer than half of experienced teachers had participated in professional development on the uses of new technologies.

Beyond issues of access to adequate hardware, software, and communications links are other barriers to the effective use of technologies in schools: the absence of a vision for technology use that takes into account new curricular and other possibilities; the lack of training and ongoing support for curriculum integration; and the lack of teaching time to experiment with new technologies, share experiences with other teachers, plan lessons using technology, and attend technology courses or meetings.

Source: Office of Technology Assessment (OTA), *Teachers and Technology: Making the Connection* (Washington, D.C.: U.S. Congress, 1995). Adapted from the *OTA Report Summary*, April 1995.

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> We don't lose several weeks each September learning a new set of names, teaching the basic rules to a new set of students, and figuring out exactly what they learned the previous year; and we don't lose weeks at the end of the year packing students back up. Most importantly, teachers and students get to know each other—teachers get to know how each student learns, and students know which teachers they can go to for various kinds of help. The importance of this is incalculable.[71]

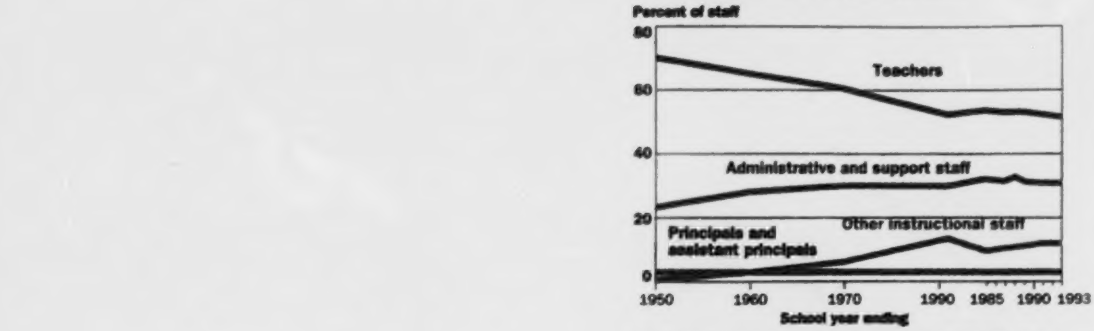
In addition, because teachers serve as counselors, they know their students from a personal as well as an academic perspective. And because they work in teams, they can help each other solve problems related to individual students and to teaching. These arrangements turn out to be much more effective for learning—especially the intensive learning demanded by high standards—than the assembly-line strategies used by U.S. schools.

In addition, traditional school structures use time badly. School courses and time blocks assume that all students in a group will learn at the same pace—an assumption long known to be inaccurate. Flexible schedules, extended learning blocks, and technology aids that would allow teachers to vary the resources they use with different students are rare. Typical time blocks for learning—the usual 42-minute periods or shorter blocks for elementary school subjects—are too short for the kinds of tasks needed to develop high levels of performance: extended discussion, sustained project work, writing, research, or experimentation. Students rush from one class to another, barely getting settled and engaged in serious work before they must jump up en masse to run to the next class. Teachers have almost no time to plan together, build well-crafted lessons, or consult with one another about problems of practice. The teacher's job is defined as meeting with large groups of students virtually all day. All of the other functions of the school are assumed by other people—supervisors and specialists—who are supposed to plan, augment, and coordinate the work of teachers, as well as attend to the proliferation of reporting requirements bureaucracies generate.

Finally, there are far too many people on the sidelines. The overspecialization of American schools has led to a wide array of services for students that are administered by different people in separate divisions reporting to other people who must then coordinate their tasks and manage extensive paperwork. In a typical school system, there is one staff member for every nine children, but fewer than half of them are classroom teachers. Consequently, class sizes average 24 and can reach well over 30.[72] Although nonteaching staff work hard, their work is structured in ways that do not support student learning well. When a dozen different people with large caseloads are supposed to treat different parts of the student, both accountability and effectiveness are reduced. No one has deep knowledge of the students' needs or clear responsibility for solving problems. In addition, this form of organization creates a huge need for coordination, which drains resources from classrooms into offices around the periphery of teaching.

What all of this adds up to is an unanticipated design flaw. Although more and more adults are working in schools, fewer and fewer are actually in the classroom.

Type of Staff Employed by Public Schools In full-time equivalents



Note: Plotted points in each chart include school years ending: 1950, 1960, 1970, 1981, 1985-1991, 1993.

Source: U.S. Department of Education, National Center for Education Statistics, Statistics of State School Systems, Common Core of Data. Published in *The Condition of Education 1993* (Washington, D.C.: National Center for Education Statistics, 1993), pp. 148, 149 and *The Digest of Education Statistics*, 1995, p.89

Indeed, the proportion of professional staff classified as teachers has declined consistently over the years, from more than 70% in 1950 to 52% in 1993. Of these, more than 10% are specialists not engaged in classroom teaching.[74]

During this period, the number of nonteaching staff increased by more than 40%[75] as schools grew in size and added many more administrative and support staff; school problems were increasingly treated with special categorical programs; and top-down reforms created larger bureaucracies. According to a U.S. Department of Labor study, more than 21% of elementary and secondary school employees in 1986 were administrators and their support staff; another 21% were engaged in services like maintenance and transportation; and 58% were engaged in teaching and professional specialties, including counseling, testing, and librarianship.[76] About three-quarters of this last category (roughly 43.5% of the total) were classroom teachers. In short, for every four classroom teachers, there are nearly six other school employees in the United States.

By contrast, teaching staff in other countries make up 60% to 80% of public education employees (see table 1).[77] Rather than hiring lots of nonteachers who plan and manage the work of teachers, these countries hire more teachers and give them time to plan and manage their work together—and hence to become ever smarter about what they do. In a recent eight-nation study, the United States had by far the lowest ratio of core teaching staff to other professional staff (less than 1:1), well behind the leader, Belgium, at 4:1.

The organizational assumptions that led to this way of managing work are now being abandoned in high-performance businesses that are flattening hierarchies, organizing work so it is done in teams rather than by isolated workers, and investing in more highly skilled employees who can take on a wider array of roles

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Table 1: International Comparison of Instructional and Other Staff, By Country

Country	Percent of Staff Who Are:			
	Teachers	Instructional staff including principals	Other administrative and support staff	**Ratio of teachers and principals to other staff**
Belgium	80.0%	10%	10.0%	4.0 : 1
Japan	77.4%	—	22.6%	3.4 : 1
Italy	76.4%	7.3%	14.5%	3.5 : 1
Australia	69.1%	7.1%	28.6%	1.9 : 1
Finland	60.8%	39.2%	—	1.55 : 1
France	60.0%	40.0%	—	1.5 : 1
Denmark	57.9%	28.1%	15.8%	1.3 : 1
U.S.	43.6%	24.2%	33.9%	0.75 : 1

Source: Organization for Economic Cooperation and Development (OECD). *Education at a Glance: OECD Indicators* (Paris: OECD, 1995), in *Using What We Have To Get the Schools We Need: A Productivity Focus for American Education* (New York: The Consortium on Productivity in the Schools, 1995), p. 44

and responsibilities and who have access to technologies that allow them to work more efficiently. Schools that have restructured their work in these ways have been able to provide more time for teachers to work together *and* more time for students to work closely with teachers around more clearly defined learning goals."[8]

Like the "learning organizations" that management expert Peter Senge writes about,"[9] these schools continually improve what they do because they create teams that develop a common sense of organizational goals and shared ideas about how things work. As people work together to analyze what's working and to solve problems, they develop the ability to see how the whole and its parts interact with each other to create today's reality and tomorrow's possibilities.

While U.S. teachers typically report that they do not have the time and resources to do their work, that they have too few opportunities to interact with colleagues and little influence on school policies and practices, teachers in restructuring school environments feel differently. A recent survey of teachers regarding the effects of recent school reforms[10] found that those in restructuring schools with site-based management were much more likely to report they were engaged in important educational changes, such as more rigorous graduation standards, performance-based assessment practices, emphasis on in-depth understanding rather than superficial content coverage, cooperative learning, and making connections between classroom practices and students' home experiences.

In addition, these teachers were much more likely to report that their schools were providing more structured time for them to plan and work with each other on professional matters, enabling them to observe and coach each other in the classroom, work in teams, and meet with students and parents.

Because of these changes, teachers in reforming schools felt they had more opportunity to adapt their instruction to the needs of their students and to invent more effective methods, rather than being constrained by district routines or outmoded methods. They were more optimistic about principal-teacher relationships, working conditions for teachers, the educational performance of students, the professional status of teachers, and their own job satisfaction. They were significantly more likely to report themselves very satisfied with their career as a teacher and to see teachers as the agents of reform rather than as the targets of reform.[81]

Moving Ahead

These seven barriers—low performance expectations for students; unenforced standards for teachers; major flaws in teacher preparation programs; the practice of leaving new teachers to flounder in their first year; the lack of serious professional development for teachers; few rewards for knowledge and skill; and poorly organized schools—are the major challenges that must be addressed. But the nation's efforts to address them are continually sidetracked by a set of myths that divert the public's attention from putting teaching at the top of the nation's education reform agenda.

Fatal Distractions: Five Myths about Teaching

It is quite clear that the challenges confounding teacher improvement are long-standing and complex. There are no "silver bullet" answers that will fix them tomorrow. They require thoughtful, coherent, long-range solutions. Yet even successful efforts to deal with these problems have made little headway against a persistent set of beliefs that substitute bromides and platitudes for the hard work required to improve teaching.

The Commission thinks of these beliefs as myths, but they are so powerful that they amount to fatal distractions diverting attention from the need for reform. Like any myth, these are contested perceptions: There is some truth in them, along with much that is not true. Like any myth, they have a life of their own that does not reflect changing times and realities. Like any myth, they can be used to hamper or accelerate positive change. It is time to confront these perennial myths, so that they can give way to more productive foundations for moving forward. Among them, five stand out:

Myth #1: Anyone can teach.

Myth #2: Teacher preparation is not much use.

Myth #3: Teachers don't work hard enough.

Myth #4: Tenure is the problem.

Myth #5: Unions block reform.

Myth #1: Anyone Can Teach

Sometimes this myth is expressed with the old bromide: "Those who can, do. Those who can't, teach." A twist on this sentiment is the view that "teachers are born and not made." However stated, this attitude is as widespread as it is distasteful and cannot be ignored.

The idea that anyone can teach is nonsense—as any parent organizing a child's birthday party or chaperoning a high school dance can attest. Being responsible for a room full of children or adolescents for even a few hours can be one of the most difficult, frustrating assignments of adult life, even if the goal is merely survival rather than productive learning.

Most college graduates can recall brilliant professors who knew a great deal about their fields—but could not explain what they knew to their students. Most people have also experienced the book-bound lectures of teachers who did not themselves understand their material—or their students—and were barely a chapter ahead of the class. And many parents suspect that some teachers manage ineptly, because their children report being confused or intimidated by some teachers, but not others.

Literally hundreds of studies confirm that the best teachers know their subjects deeply, understand how people learn, and have mastered a range of teaching methods.[82] These findings hold true for high school fields ranging from mathematics and science to vocational education, as well as for early childhood and elementary education. Better prepared teachers are strikingly more effective in developing higher-order thinking skills and in meeting the needs of diverse students through different learning approaches.[83]

In short, the belief that anyone can teach—or the view that teaching skills cannot be taught—is misguided and dangerous. Anyone can teach? Students everywhere know better—and so should educators and policymakers.

Myth #2: Formal Teacher Preparation Is Not Much Use

This myth is pernicious because it describes what many veteran teachers remember about their teacher education courses of 20 years ago as well as what some members of the public think about how one learns to teach. There are two beliefs lurking beneath this myth. One is that teacher education programs are hopelessly poor and better avoided—perhaps even a disincentive for smart people to enter teaching. The other is that teaching is best learned, to the extent it can be learned at all, by trial-and-error on the job. A large body of evidence contradicts both of these beliefs, but they linger on.

Even given the shortcomings of some teacher education programs, studies over the last 30 years consistently show that fully prepared teachers are more highly rated and more effective with students than those whose background lacks one or more of the elements of formal teacher education—subject matter preparation, knowledge about teaching and learning, and guided clinical experience.[84] In addition, the profession has worked to redesign teacher preparation programs over the last decade. Many colleges of education are integrating new standards for students and teachers into the curriculum, incorporating new knowledge, and creating extended internships. Older teachers' memories of teacher education programs are less relevant to today's reality with every passing year.

Furthermore, talented recruits are entering schools of education in record numbers. Due to recent reforms, both standards and interest have been steadily rising. By 1991, graduates of teacher education programs had higher levels of academic achievement than most college graduates, reversing the trends of the early 1980s.[85] The only entering teachers with lower than average college achievement were those who entered on emergency licenses without teacher preparation.[86] A number of major state universities have developed five-year programs of teacher education, created professional development school partnerships, and made other changes that have dramatically strengthened teacher preparation. Top state universities in Wisconsin, Michigan, Tennessee, Virginia, Kansas, Ohio, New Hampshire, Texas, and Florida are among them. They are joined by graduate-level Master of Arts in Teaching (MAT) programs at Columbia, Harvard, Stanford, and many others in training tens of thousands of talented candidates across the country, and they have more top-flight applicants than they can accept.

As for the second half of the myth, many high-quality alternative pathways into teaching have proved effective in preparing nontraditional entrants—midcareer recruits and retirees from business and the military—to enter and succeed at teaching. The Commission endorses these programs. The most successful offer a streamlined, carefully constructed curriculum that integrates courses on learning theory, development, teaching methods, and subject matter knowledge with an intensively supervised internship prior to entry.[87] Because they are tailored to the specific needs of recruits and are undertaken in partnership with nearby schools, they can concentrate preparation within a 9- to 12-month program and provide the additional mentoring that really prepares candidates to teach.

In contrast to these well-designed nontraditional routes, programs offering a few weeks of summer training before new hires are thrown into the classroom are not an adequate answer. These kinds of programs, developed by a few states and school districts as well as outside vendors, have proven to be even lower in quality than the programs they aim to replace. Studies of such efforts consistently reveal severe shortcomings: Recruits are dissatisfied with their training; they have greater difficulties planning curriculum, teaching, managing the classroom, and diagnosing students' learning needs. Principals and other teachers typically rate them lower on key teaching skills, and they leave teaching at higher-than-average rates. Most important, their students learn less, especially in areas like reading and writing, which are critical to later school success.[88]

If this Commission's recommendations are accepted, there will be no more shoddy education programs. Equally important, there will be no more resources wasted on quick-fix solutions masquerading as real answers to complex problems.

Myth #3: Teachers Don't Work Hard Enough

Skeptics and cynics are always with us, and their first question is, how hard can it be to work 180 days a year, with half the afternoon free? And if teachers' salaries are lower than those of other college graduates, isn't that because the job is so easy? In fact, because teachers' visible schedules mirror those of students it is easy to believe that teachers enjoy an undemanding life. But the truth is American teachers work very hard—typically 50 to 55 hours per week and most days over their vacations.[89]

The job of an American high school teacher, described here, requires enormous hard work along with creativity and skill:

WANTED

College graduate with academic major (master's degree preferred). Excellent communication/leadership skills required. Challenging opportunity to serve 150 clients daily on a tight schedule, developing up to five different products each day to meet individual needs, while adhering to multiple product specifications. Adaptability helpful, since suppliers cannot always deliver goods on time, incumbent must arrange for own support services, and customers rarely know what they want. Ideal candidate will enjoy working in isolation from colleagues. This diversified position allows employee to exercise typing, clerical, law enforcement, and social work skills between assignments and after hours. Typical work week: 50 hours. Special nature of the work precludes amenities such as telephones or computers, but work has many intrinsic rewards. Starting salary $24,661, rising to $36,495 after only 15 years.

Because American teachers have little time during the school day for planning, locating materials, talking with parents, meeting individually with students, consulting with one another, or grading papers, they do all of these things after school hours, typically well into the evenings, on weekends, and during "vacations." As one teacher explained to us,

> People think we work six hours a day but I'm still there till five or even seven. They think we get the summer off, but I'm taking courses or planning for next year. . . . We don't have part-time jobs.

Despite a shorter school year, no nation requires teachers to teach a greater number of hours per day and year than the United States. American teachers teach more than 1,000 hours per year, far more than teachers in other industrialized countries, who teach between 600 and 800 hours per year, depending on the grade level.[90] In most European and Asian countries, teachers spend between 17 and 20 hours of a 40- to 45-hour work week in their classrooms with students. The remaining time is spent at school planning and working with colleagues, as well as parents and students.[91]

In contrast, most U.S. elementary school teachers have three or fewer hours for preparation each week (only 8.3 minutes for every hour in the classroom), and secondary teachers generally have five preparation periods per week (thirteen minutes per hour of classroom instruction).[92] Most teachers spend at least 10 to 15 hours each week outside school preparing lessons and grading homework and papers. This time is spent in isolation, in contrast to the in-school time of teachers in other countries, which is spent primarily in collaborative planning and learning.

U.S. teachers don't work hard? Teachers overseas report they could not succeed in the conditions under which American teachers work.[93]

Myth #4: Tenure Is the Problem

Teachers, like everyone else in an era of corporate downsizing, value job security. However, there is in fact no such thing as lifetime "tenure" in public schools. What public school teachers receive after three years on probation is a presumption in their favor that they will be rehired for one-year terms unless cause for not hiring them can be demonstrated.

For many years, the "tenure" offered after probation was expected to compensate for lower wages and poor working conditions in schools. Tenure began as a response to arbitrary dismissals of qualified teachers when school boards wanted to offer positions to friends and relatives; when they fired senior teachers to save money by hiring inexperienced replacements; or when board members forgot that schools are nonpartisan and went after teachers on grounds of politics or personal belief.

No one can doubt that these protections continue to be needed today. Scarcely a month goes by that major newspapers do not report at least one scandal regarding the award of school contracts or positions. Good teachers with experience still need and deserve a presumption of employment when budget cuts loom. And as ever-present debates about curriculum underline—Is evolution scientifically valid or simply a plausible alternative to creationism?—the substance of learning is always a potential source of political mischief.

In these situations and others, teachers deserve some protections. They are entitled to employment security that protects them from potential manipulation or corruption and from zealots of the Left or Right intent on imposing their personal views of the world through the classroom.

However, to support tenure is not to advocate job security for incompetents. Tenure for teachers makes sense only when offers of continued employment are based on evidence of competence. This is where the system sometimes breaks down. When reemployment is *pro forma*, an important quality assurance mechanism is undermined. Several local teachers unions, affiliates of both the American Federation of Teachers and the National Education Association, convinced that incompetent teachers harm the entire profession, have taken steps with their school boards to evaluate and assist teachers and counsel poor ones out of the profession, both during probation and after it ends. Some boards and unions have also taken the leadership to find ways to recognize and reward good teachers for their knowledge, skills, and performance. We believe that both kinds of initiatives—those that improve or remove poor teachers and that recognize good ones—are essential, and our recommendations endorse these approaches.

Myth #5: Unions Block Reform

School boards and policymakers have sometimes been quick to accuse educational unions and professional organizations of being a major cause of our current school problems. Teacher organizations are condemned for being too political, too concerned with the bread-and-butter issues of salaries, and too bureaucratic and inflexible to respond to reform initiatives and challenges. They have been characterized as obstructionists in our quest for better schools. That perspective is partially a result of the history of collective bargaining between the members of such organizations and their employers, in many states a history of struggle that has included divisive strikes.

Bargaining in the traditional mode has pitted unions and school management against each other and has not fostered collaborative relationships. It has occasionally established a division between practitioners and policymakers, perpetuated mistrust among stakeholder groups, and resulted in overly cumbersome contractual requirements. Unintentionally, collective bargaining agreements have sometimes established or continued conditions that are inimical to change. As contracts have evolved within school bureaucracies and have mirrored the systems in which they are embedded, many have come to include rules that are restrictive during a time of reform. The same is true of many federal, state, and local regulations, whose roots in old systems and procedures can be frustrating when changes are sought. Roadblocks to reform that are a product of the system we have developed exist on all sides.

But what is sometimes mistaken for protection of the status quo is often reasoned caution about untested educational fads that teachers fear may impede the education of children or weaken our fundamental commitment to free public schools. Although it doesn't make nightly news, teacher groups have often been at the forefront of the movement to improve schools and enact greater quality assurances in teaching. A number of recent research studies have documented how reforms have been initiated, embraced, and strengthened by teacher associations in communities across the country, ranging from Wells, Maine, and Miami, Florida; to Hammond, Indiana, and Louisville, Kentucky; to Bellevue, Washington, and Cerritos, California.[94]

As school boards and teacher unions have become aware of public reactions to their conflict and of threats to public education, they have moderated their disagreements and emphasized cooperative work on such issues as school improvement initiatives; changes in teacher education programs; and greater quality assurance from entry and tenure to advanced certification. In a growing number of places, progressive school boards, superintendents, and teacher associations are inventing new ways of managing schools through negotiated responsibility for school improvement and shared accountability for student learning. They are creating partnerships for the redesign of schools and seeking to ensure that only competent, caring people enter and remain in teaching.

Teacher organizations for the 21st century have improved student learning at the heart of their mission. Through their collective voice, teacher unions have argued for better preparation, the hiring of qualified teachers, and better conditions in schools because they know that gains on these fronts are gains for students. They have begun to push for greater professionalism and to challenge the status quo within their own ranks. Although there is a need to build more secure bridges between unions and school boards, recent efforts point the way to a new era in which teacher organizations and local policymakers join forces on behalf of student advocacy and professional accountability.

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Beyond the Myths: An Action Agenda for Change

Each of these distractions has deflected our efforts from the serious work of reform. It is time to move beyond them to create an agenda for change that incorporates what works. There is little mystery involved here. Preparing teachers for the 21st century is difficult, but there are plenty of examples that it is possible. We know what to do. We know a great deal about what it takes to be a good teacher; we know what teachers need to know in order to succeed; and we know how to prepare teachers so they can be successful.

The good news is that reforms stimulated by policymakers and the profession have encouraged major changes across the country—in teacher preparation; standards for accreditation, licensing, and certification; improved salaries and more aggressive recruitment; induction of beginning teachers; and greater accountability for teacher quality. These changes are evidence of a deepening commitment to professionalism in teaching.

The bad news is that these efforts are not the norm in education—nor are they systematically incorporated into the education system. What we find, instead, is a promising innovation here, a new practice there, but only rarely are they connected to each other. At the same time, the relentless need for teachers means that many states and districts continue to ignore entry standards for teachers, quietly reneging on their obligations to students and the rhetorical commitments they have made to parents.

What is required is a great national crusade united behind the proposition that competent teaching is a new student right. We must understand that if this nation is to prepare all of its children for the challenges of the 21st century, teaching must be able to recruit and retain able, well-prepared teachers for *all* classrooms. These entrants must be equipped with the knowledge, skills, and dispositions that will enable them to succeed with *all* students. And, *all* of their workplaces must offer them the support they need to develop and grow as professionals in a lifelong career.

The recommendations that follow are banners behind which the crusade's supporters can rally.

A Better Way: Teaching for Tomorrow . . . Today

Envisioning how new goals can be reached is the first step to achieving them. Many of the recommendations of this Commission already exist in some places. This scenario—a real story—illustrates how new conditions for teaching and new careers for teachers can come alive.

Ask middle school teacher Bonnie Dorschel to describe the ideal teaching and learning environment and she responds, without hesitation, "We have it." The reason for her enthusiasm is clearly not a function of fancy facilities or affluent surroundings. The cluster of rooms she shares with her interdisciplinary teaching team within Douglass Middle School in Rochester, New York, is make-do. Her students in this special program are, purposely, more than ordinarily diverse. And she teaches an extra period a day while managing additional responsibilities as one of Rochester's lead teachers responsible for mentoring first-year teachers.

What is it that keeps this 30-year veteran of teaching energized and committed to teaching when she considered leaving the profession just a few years ago? There are at least three answers to this question: Bonnie's work with other colleagues in creating a successful new program for urban students, her recent successful efforts to pursue National Board Certification, and her work as a lead teacher in Rochester's career continuum—a role that allows her to share her talents with beginning teachers and others who want or need assistance in learning to teach.

Bonnie is a member of a ten-teacher team, FIRST CLASS, which began in 1990 as an alternative within the traditionally organized, 1,300-student Douglass Middle School. The idea first flickered when a few teachers became excited about field studies as a way of engaging young adolescents; it grew as they conducted their own research. The more they discovered about adolescent development and learning, the more inappropriate traditional teaching and organization seemed.

Although the whole school was not ready to make changes, the team received permission to organize a program for 150 students within the larger school. FIRST CLASS is designed to be a supportive environment for their students—so city-wise and vulnerable to failure—to work together "toward individual and collective success in a climate of diversity, peacemaking, and academic rigor." Says Bonnie, "We want to make a change in the kids' lives. None of us wants to give up on them."

Their successes are already tangible: In FIRST CLASS, all of the students have passed the school district's writing/literacy tests for the past two years and suspensions are lower than in the rest of the building. Parents like the frequent contacts and the grading system, which emphasizes effort and growth in four areas: engagement, collaboration, independence and self-direction, and performance (quality of work). The team sees substantial growth in their students over time—in their ability to make decisions, work with adults, and facilitate their own learning.

Teaching Diverse Learners to New Standards

At the beginning of the school day, Bonnie team teaches with math teacher Pina Buonomo. Their teaching is based on standards gleaned from the work of national standard-setting groups. Math literacy classes are interdisciplinary and focused on helping students master complex goals like communicating mathematically, solving problems, reasoning, inventing, constructing meaning, and making connections. In this untracked, cross-grade class of 28 students, Bonnie and Pina focus on potential, not labels. A visitor cannot tell which students might be identified as gifted, average, or learning disabled. The teachers know their students well enough, however, to determine how best to organize cooperative learning and who should tutor whom. Their discussions about adolescent development, as well as weekly meetings about individual students' progress and problems, are bolstered by having the students as "family" for three years.

"They know us and we know them really well," says Bonnie. " But best of all, they are comfortable about talking to adults when they leave here, and that's a good thing to be able to do in high school."

In her account of teaching and learning for a portfolio submitted to the National Board for Professional Teaching Standards, Bonnie describes one student's interactions with others and with her, illustrating how knowing a student well influences instructional decisions:

"The leader alternates from being a positive role model and a peer mediator to instigator of conflict between her peers. . . . I have asked her to help with B and to model leadership qualities, and some days she is wonderful; other days she is unwilling to cooperate. We talk, and our relationship is generally positive, but I need to remember that although she looks much older, there is a little girl inside.

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I remember that when I frequently observe her sucking her thumb. Her writing skills are poor, but she expresses herself verbally very well. She is very funny, and we appreciate each other's sense of humor. I want to respect her need to sit near her friends but will make it clear that group work must be done. I often join their group or ask them to use the tape recorder while they are working. It seems to work."

Teaming with another teacher is a boon for Bonnie, who did so even before FIRST CLASS started. Not only is it a better way to organize class time and deal with individual needs and problems, but when teachers know each other's priorities and values, "we can work together for the kids more easily."

She and Pina agree, for example, "that you can't go head to head with adolescents." Built into the FIRST CLASS program is conflict resolution training for all students and teachers. This is part of the Friday block sessions that deal with personal concerns and choices as well as progress on academic goals.

Community connections are a favorite aspect of FIRST CLASS for Bonnie. Students select community agencies to work with each year—the children's hospital, a mission for the homeless, or perhaps a shelter for battered women and their children. The teachers in FIRST CLASS are moving toward requiring community service for eighth-grade graduation because, says Bonnie, it is a way for young people "to see the connectedness of our lives." Bonnie also integrates studies of Rochester's sister cities—in Mali, France, or Germany, for example—into the curriculum. This also introduces FIRST CLASS students to foreign languages.

Later in the day, about a dozen students gather in Bonnie's classroom around a long, wide table that takes up most of the room surrounded by cabinets and student work. Other students are just finishing up projects at the seven computers against one wall or at the table where their bookmaking work had been spread. "I use technology in all the things I do in reading," Bonnie explains, including creating books, problem solving, and predicting outcomes. She combines reading strategies and computer applications adroitly, fostering collaboration among her students. She is available in her mini-computer lab whenever anyone needs her—before or after school, during lunch, and when teachers and students come in to work together. She also conducts workshops throughout the district and provides support to other teachers within Douglass Middle School.

The small group settles down for recreational reading. Bonnie and her colleagues think of literacy in its most exciting sense, an ability to enjoy speaking, listening, writing, and reading. Her students draw from drama, poetry, shared novels, Shakespeare, and their own book publishing to learn what literacy means. Journal-keeping by teachers and students is a common element in all of the classes.

The recreational reading group is now almost finished with a Civil War novel, *War Comes to Willy Freeman*, and is discussing the personal aspects of slavery and freedom. Bonnie chooses recreational reading books frequently because she knows most of her students do not read on their own at home. "Few people do," she notes candidly. She asks the group respectfully, "Is there anyone who doesn't want to read today?" Finding them all ready, she leads a discussion, constantly urging her students to put themselves in the shoes of the novel's protagonist, Willy: "Remember, she is only 14, she has no one to turn to, no one knows she is free. What would you do? Go back? Keep running?" The students discuss all of Willy's options, debating and defending their own choices. They agree to finish the book at home and to be ready to talk about the ending at the next class.

A Collective Vision for Redesigning School

To Bonnie, it is important to see students investing in their own learning. And it is essential "that I am surrounded by people who want that." Generated by the desire to act on shared beliefs about teaching, FIRST CLASS fosters collaboration and respect among adults as well as students. Every teacher in FIRST CLASS teaches a multidisciplinary project group, a math and literacy class, and a psychology class. The team has a specialist in each subject area who serves as a resource for both students and teachers. Team members take on the hyphenated role of teacher-counselor. Each team member works with a small group of students in homeroom and again in the psychology block to help students succeed and make viable choices.

Special education teachers are part of the team, helping provide strategies for students with learning disabilities, such as using precise language when explaining or asking questions. Nancy Sundberg, a special education teacher, is the team's chief researcher, constantly searching for information about the ideas and projects they undertake.

The teachers develop curriculum together, basing science and social studies content on a cycle of themes that engage students in projects during their three years in the program. The theme of "Local Connections: Rochester and New York State," for example, involves study of habitats and ecosystems, international sister cities, "Rochistory," and the underground railroad. Bonnie chooses field studies directly tied to the themes. In the French language and culture project, for example, art studies focused on the Impressionists, so she took students to the Lilac Festival and to the Impressionist room at the art gallery for a painting class. Each unit finishes with an exhibition where students are both teachers and learners, using written, artistic, taped, and oral presentations to describe their work.

Collaboration and Professional Development

While certain times are set aside during the week to discuss students and logistics, teachers talk together all the time. Bonnie's huge table is often a center of operations and discussion, the mini-computer lab against the wall a place for teachers and students to zero in on projects whenever no classes are taking place. The teachers are quick to praise each other, but they acknowledge that consensus building gets rough at times. Some teachers are tidy; some can only work in chaos. Their efforts to develop student assessment needed support. Were they to depend only on their own experience and knowledge, the team members might be unable to continually enrich their vision. Part of their collaboration, however, has been to pursue opportunities for professional growth that support their goals.

For example, Bonnie and the others participate in Performance Assessment Collaboratives in Education, a five-year national project to explore the use of portfolios in urban classrooms that supports the teachers' desire to find alternatives to traditional assessments. They are also part of New Standards, a project to benchmark standards and assessments to world-class levels. This helps them focus on student work to evaluate their own success as well as that of students. The attributes of accomplished teaching, as expressed in the assessments of the National Board for Professional Teaching Standards, guide their professional practice.

This last activity stems from the leadership of the Rochester Teachers Association in supporting the National Board. Three teachers (half of all those certified in New York on the first round), came from FIRST CLASS. Bonnie and the others who passed certification helped each other with materials and videotaping, then negotiated released time for the next group of Rochester teachers who applied for certification.

The National Board process, says Bonnie, "forced me to look more closely at my work and made me more comfortable with asking students for their input on my teaching. They really like to be involved." She also relishes the collaboration that team teaching, PACE, and the other professional activities require. "I don't see myself alone anymore," she says. "I learn from first-year teachers, from the most gifted and experienced teachers. We spend a lot of time watching and learning."

Union vice president Tom Gillett, formerly a high school English teacher, asked to become part of FIRST CLASS in order to qualify as an applicant for National Board certification. He has stayed at FIRST CLASS as one of those who became certified not only because of the support the program gives to students, but also because of the process the team goes through. "People are here for the same reason," he says, "even though they don't all think the same way." Learning from one another and supporting students is the goal, and it permeates all that the team does.

Serving the Profession through Lead Teaching

It is afternoon now, and Bonnie has moved on to another of her responsibilities—that of a mentor teacher for Rochester's Career in Teaching (CIT) program. The program provides mentoring for all beginning teachers and for veteran teachers having difficulty. Lead teachers are selected for their expertise in teaching via a rigorous process of evaluation. These teachers provide intensive assistance and advise a panel of administrators and teachers on contract renewal for those with whom they work.

These evaluations support a career ladder with steps in compensation for moving from an initial internship (supervised by a lead teacher) to "residency," to professional teacher status, and then to lead-teaching status later in the career. The CIT program has also established new approaches for ongoing teacher evaluation relying on the standards and portfolio processes modeled on that of the National Board for Professional Teaching Standards. In structuring their professional development and gathering evidence about their teaching, teachers include evidence about student learning as well as input from colleagues, students, and parents.

Bonnie is visiting with Gretchen Beon and Joan Labrosa, who have neighboring classrooms on the top floor of a spanking new middle school. Joan spent almost a decade in a career at Kodak before deciding to go back to graduate school to prepare for teaching. Gretchen came from a career in recreation. No amount of experience, however, could have fully prepared them for the first year of teaching. Bonnie's mentoring has been a lifeline.

Bonhie visits them and two other new teachers every week, as well as one tenured teacher who has asked to be observed by a mentor. On this day, Bonnie sits at the back of Gretchen's classroom to follow the behavior of three students who have been giving the teacher extra trouble. She notes whom they talk to, what draws their interest, what distracts them, then discusses her observations after the class and gives some suggestions. "You need to decide," she tells Gretchen, "if you want your students to talk while taking notes. If you do and want them to finish, too, then perhaps you could use a timer." These important tips, small and large, are what help beginning teachers master the innumerable complexities of teaching.

"Bonnie not only finds materials for me and informs me about contractual details, but she is so reassuring," says Gretchen. "Some days are just terrible, but she's there to put me back together again. We talk about the problems, and then she says, 'Now, let's move on.'" Bonnie notes that the most important tool with those she mentors is trust. "They have to know that it is OK to make mistakes, that I'm the one to make mistakes in front of." Knowing that Bonnie is certified by the National Board is especially important to Gretchen. It affirms that Bonnie "is a good role model for me."

Bonnie is an advocate, but she also is an evaluator. Under the CIT program, mentors assess the potential of beginning teachers and make recommendations about their probationary status. It is Bonnie's responsibility to encourage those she is mentoring in, or out, or to another level of teaching. She accepts this awesome task because "we don't want people in teaching who can't do good things for children." Under the CIT program, about 8% of Rochester's beginning teachers are not renewed for a second year of teaching.

Personal Values, Professional Life

When Bonnie Dorschel began teaching many years ago in a safe suburb of Rochester, she had only traditional notions of a career and of teaching and learning. Children sat in rows, teachers taught in years that rarely changed from September through May. But she was bored. Bonnie chose to move to Rochester, ultimately teaching at all levels, including some college-level classes. While raising three children, she obtained a master's degree in urban education and state certification in reading, English, and administration. Courses did not count as much as the opportunities she found to enjoy and explore new people and ideas, whether in a sister city in France, a Korean cultural camp, or a local classroom using technology to expand students' knowledge.

Bonnie is well aware of the changes in the city where she and her family have chosen to live and work. When she started teaching, "seventh-graders were not getting pregnant, parents were home when you called." She would never have thought it necessary to call a student in the mornings to get her up (as she did with one child whose parents left very early for work). Nor would she have thought it important to read the police blotter of the local weekly to know what's going on in the lives of kids at home.

Despite her enthusiasm for teaching in an urban classroom, Bonnie felt hemmed in by policies and practices she did not feel were appropriate for her students. She thought about "closing the door on teaching," but then the FIRST CLASS team began to form and the Career in Teaching program empowered her to make a real contribution to the quality of the profession. For the first time, she felt she had a say in the policies and supports needed for teachers and students.

Bonnie sees herself as an uncompromising optimist, a view that is revealed as much in her conversations with colleagues as it is with students. "I have fun meeting the challenges of working with kids over time," she says. "And most of what I learn comes from the excellence around me. I'm pleased with the changes we are making." Most of all, Bonnie is grateful to be working with people "who push their limits. . . . All of us are just a work in progress."

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Recommendations: An Action Agenda for Change

As various panaceas have been advanced in the last decade to solve the problems of learning in America, education reform has moved in fits and starts. Indeed, the "reform *du jour*" has become a problem in its own right in American schools because teachers have learned to ride out the latest fad on the well-founded assumption that it too will pass.

Reform can succeed only if it is broad and comprehensive, attacking many problems simultaneously. But it cannot succeed at all unless the conditions of teaching and teacher development change. Indeed, when this Commission's recommendations are put into place, educators will find that they end the waves of reform that crash over American schools without effect because our schools will have developed the capacity to continually renew and improve themselves.

Our proposals provide a vision and a blueprint for the development of a teaching profession for the 21st century that can make good on our nation's goals for education. They are systemic in scope—not a recipe for more short-lived pilots and demonstration projects. They require a dramatic departure from the status quo—one that creates a new infrastructure for professional learning and an accountability system that ensures attention to standards for educators as well as students at every level—national, state, local school district, school, and classroom.

If the press for higher educational standards has taught us anything, it is that congruence matters: If the actions of federal and state governments do not support the work of local school districts, and if those of school districts do not support the work of schools, very little of worth can be accomplished. What goes on in classrooms between teachers and students may be the core of education, but it is profoundly shaped by what parents and principals do and by what superintendents, school boards, and legislatures decide. When various parts of the system are working against one another, the enterprise lurches around like a carriage pulled by horses running off in different directions.

Congruence and commonality of effort in a decentralized system require that we prepare people—both educators and policymakers—to manage that system in a way that is guided by shared commitments and knowledge. Without that common knowledge base to inform practice, there can be no guideposts for responsible decision making.

What we are proposing is a set of steps to ensure the common base of knowledge and commitments upon which a truly democratic system of education can be built. We are urging a complete overhaul in the systems of teacher preparation and professional development in this country to ensure that they reflect and act upon the most current available knowledge and practice. This redesign should create a continuum of teacher learning based on compatible standards that operate from recruitment and preservice education through licensing, hiring, and induction into the profession, to advanced certification and ongoing professional development.

We also propose a comprehensive set of changes in school organization and management that will provide the conditions in which teachers can use their knowledge much more productively to support student learning. And finally, we recommend a set of measures for making sure that only those who are competent to teach or to lead schools are allowed to enter or to continue in the profession—a starting point for creating professional accountability.

For the first time, a broad-based group of policymakers and educators—including those who will have to take courageous steps to put these recommendations in place—have put forth this sweeping agenda for change and pledged to take the steps needed to implement it. We understand that these proposals are not easy to undertake and that the self-interest of various constituencies will be shaken in the process of bringing them to life. However, we believe that this comprehensive set of reforms is absolutely essential to guarantee every child a caring, competent, and qualified teacher . . . and to guarantee America a just and prosperous future.

We challenge the nation to embrace a set of turning points that will put us on the path to serious, successful, long-term improvements in teaching and learning for America. By the year 2006,

- All children will be taught by teachers who have the knowledge, skills, and commitments to teach children well.
- All teacher education programs will meet professional standards, or they will be closed.
- All teachers will have access to high-quality professional development and regular time for collegial work and planning.
- Both teachers and principals will be hired and retained based on their ability to meet professional standards of practice.
- Teachers' salaries will be based on their knowledge and skills.
- Quality teaching will be the central investment of schools. Most education dollars will be spent on classroom teaching.

We offer five recommendations to accomplish these goals:

I. Get serious about standards for both students and teachers.

II. Reinvent teacher preparation and professional development.

III. Fix teacher recruitment and put qualified teachers in every classroom.

IV. Encourage and reward teacher knowledge and skill.

V. Create schools that are organized for student and teacher success.

These recommendations are interrelated. Standards for students affect expectations of teachers and the organization of schools. Standards for teachers affect their preparation, their induction into teaching, and their continuing development as well as the roles they are capable of assuming. Experienced teachers, as well as novices and candidates, benefit from exposure to professional development schools. Changes in school structures affect everything else. However, for the sake of clarity, we treat these issues separately below. At the close, we describe how they should come together.

I. Get serious about standards for both students and teachers.

WE RECOMMEND: ***renewing the national promise to bring every American child up to world-class standards in core academic areas.***

WE RECOMMEND: ***developing and enforcing rigorous standards for teacher preparation, initial licensing, and continuing development.***

Standards for Students

The country needs to continue its work on standards defining what young people should know and be able to do. These should reflect the demands of today's society and support more challenging academic coursework and higher standards for graduation. Like those in other countries and like the much-applauded work of the National Council of Teachers of Mathematics in the United States, the standards really should be frameworks for curriculum, expressed in slim notebooks that outline a core of expectations toward which all students should strive, not a telephone book incorporating every topic under the sun. Such frameworks should be clear about common knowledge and skills while allowing for local adaptations that bring ideas to life for students in different communities and enable students to develop different interests and specialties beyond the core, especially as they move through high school. The standards and frameworks should be a central subject of ongoing conversations with parents and community members so that all those whose efforts must be mobilized on behalf of students understand what they are working toward.

States should continue to work on incorporating these standards into curriculum frameworks and assessments that provide rich information about actual student performance, enabling teachers and parents to understand what children can do and how to support their ongoing learning. In the effort to advance standards, implementation must go well beyond the platitude that "all children can learn." All children are human; by definition all of them can learn.

Using Student Standards to Develop Teaching Practice

In two local middle schools, the mathematics teachers have been worrying about a new state performance assessment to be given in eighth grade. Last year, when the test was piloted at their school, test scores plummeted. These teachers are anxious to understand better what it is that students need to know to do well on the new assessment. Two teachers volunteer to organize material from the pilot test, such as students' portfolios, and the scoring sheets. The teachers also have their student records. Each teacher gets a packet of portfolios, scoring sheets, and a few other records for ten students from across classes.

In preparation for the first meeting, they pore over the assessment but feel that they do not adequately understand either what the tasks are asking or the ways in which students' work was scored. They decide to engage in one of the tasks themselves. They complete the task and analyze it closely for what it covers mathematically and what kinds of things one needs to know and be able to do in order to do it. They then turn to looking at their students' performances and begin to see more about the different ways in which the students interpreted and approached the task. Over the course of several meetings, they repeat this cycle with different tasks. Doing the tasks is actually kind of fun, and they find that they are much better able to "see" the students' work and thinking after they have climbed inside of the tasks themselves.

Later in the year they develop a list of the kinds of understandings that the assessment seems to tap and the kinds of problems they saw in students' work. This raises a host of questions for them about how to help students do better and where to seek resources for their own learning. One of the teachers proposes attending the state National Council for Teachers of Mathematics affiliate conference, for she notices that a number of sessions target the new state assessment and at least a couple of them seem to address the teachers' questions about ways that might help them improve their teaching of these mathematical ideas and hence their students' learning.

Several elements of powerful professional education are evident in this example. The teachers are bent on improving students' performance and they construct a way for themselves to investigate mathematics, assessment, learning, and teaching using their need to look more closely at the test to understand it. The material for their investigation is their own students' last year's tests. The immediacy of the situation is a pressing incentive to participate—using a real task of practice as the context for their work. Their investigation of what was causing students to do so poorly on the test gave them an opportunity to deepen their own understandings of mathematics, as well as of students' thinking and interpretation, and of the structure and worth of tasks. Although any one of them could have done this investigation alone, working together greatly enhanced what was possible to consider and to learn: Across the group, their ideas differed about the mathematics, the tasks, and particular students. Their discussions broadened what any one person could do. Together they began to develop shared ideas and standards that could guide their collective efforts.

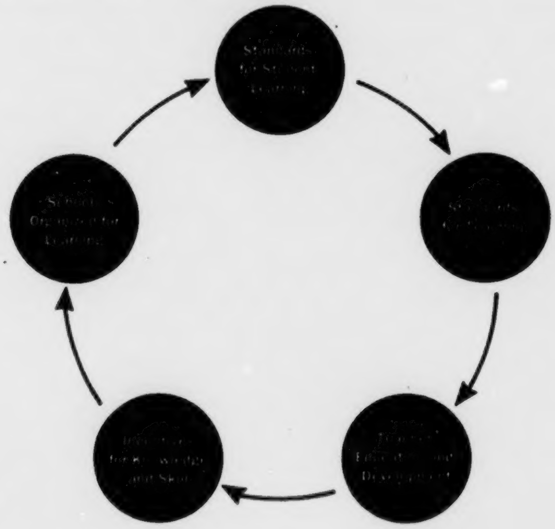
Adapted from Deborah Ball and David Cohen, "Developing Practice, Developing Practitioners: Toward a Practice-Based Theory of Professional Education" (paper prepared for the National Commission on Teaching & America's Future, 1995).

The question is: What should they learn and how much do they need to know? And how can schools support this learning?

For standards to be meaningful, they must be accompanied by benchmarks of performance—from "acceptable" to "highly accomplished"—so that students and teachers know how to direct their efforts toward greater excellence. Clear examples of the kind and quality of work expected can motivate students and help teachers to organize their work together. They can build upon the work of their predecessors and colleagues and develop reinforcing opportunities for students to practice and develop their skills. With high-quality assessments that measure important abilities, teachers can teach more purposefully and make greater demands that students and parents can better understand and respond to. Parents can reinforce students' learning at home. And schools can better organize specific academic supports and extra study time after school, on weekends, or in the summer for students who need additional help to develop the levels of competence they need to meet.

Expectations for student achievement should shape discussions of teaching and problem solving in schools. Teachers should work collectively on curriculum that supports the standards, assess how individuals and groups of students are learning, evaluate what kinds of learning experiences they have had, and make changes in what they do. This work is a key professional activity that connects standards of learning to the building of shared standards for teaching. Evidence already exists that where school faculties are working together to translate standards into courses of study, learning tasks, and assessments, they are becoming more expert and more collective in their practice, and students are learning more.[35]

Elements of Systemic Reform


Standards for Student Learning
Standards for Teaching
Teacher Education and Development
Incentives for Knowledge and Skill
Schools Organized for Learning

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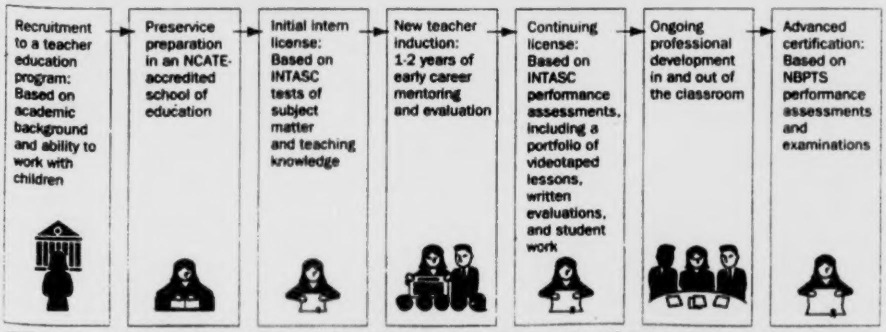
Many have voiced fears that standards and assessments will turn out to be elitist—that they will simply sort out more easily the haves from the have-nots. The Commission's vision is very different. We see standards as a starting point—not an ending point—for change. We understand that standard-setting in and of itself will not produce the changes in teaching and schooling needed to raise achievement. However, standards can create a foundation for other reforms that build the capacity of schools to help all students learn to higher levels. Ultimately, to be productive, student standards must undergird shared standards of practice that allow teachers to work more effectively together and to set expectations for themselves.

Standards for Teaching

Standards for teaching are the linchpin for transforming current systems of preparation, licensing, certification, and ongoing development so that they better support student learning. They can bring clarity and focus to a set of activities that are currently poorly connected and often badly organized. New standards and new opportunities for teacher education must be reinforced by incentives that encourage teachers to acquire ever greater knowledge and skill. These incentives can then, in turn, support the redesign of schools so that they organize themselves more effectively for student and teacher learning.

Clearly, if students are to achieve high standards, we can expect no less from their teachers and from other educators. Of greatest priority is reaching agreement on what teachers should know and be able to do in order to teach to high standards. This standard-setting task was left unaddressed for many decades,

A Professional Continuum for Teacher Development



- Recruitment to a teacher education program: Based on academic background and ability to work with children
- Preservice preparation in an NCATE-accredited school of education
- Initial intern license: Based on INTASC tests of subject matter and teaching knowledge
- New teacher induction: 1-2 years of early career mentoring and evaluation
- Continuing license: Based on INTASC performance assessments, including a portfolio of videotaped lessons, written evaluations, and student work
- Ongoing professional development in and out of the classroom
- Advanced certification: Based on NBPTS performance assessments and examinations

NCATE=National Council for Accreditation of Teacher Education, INTASC=Interstate New Teacher Assessment and Support Consortium, NBPTS=National Board for Professional Teaching Standards

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but it has recently been accomplished by the efforts of three professional bodies that have closely aligned their work to produce standards outlining a continuum of teacher development derived directly from the expectations posed by new student standards.

The new standards of the National Council for Accreditation of Teacher Education (NCATE), most recently revised in 1995, reflect the evolution of a much stronger knowledge base for teaching and require schools of education to demonstrate how they are incorporating new knowledge about the effective teaching of subject matter, various approaches to learning, and student diversity in their preparation of teachers.

NCATE's standards are connected to a set of newly developed standards for beginning teacher licensing developed by a consortium of more 30 states and professional organizations—the Interstate New Teacher Assessment and Support Consortium (INTASC)—which has tackled the question of what entering teachers must know and be able to do to teach in the ways student standards demand. The standards outline how teachers should demonstrate their knowledge of subject matter, child development and learning, classroom communication and management, planning, instruction, and assessment, and the ability to work well with parents and colleagues as a basis for gaining a license to teach. INTASC's licensing standards are the basis for tests of subject matter and teaching knowledge for an initial license and for a performance assessment that examines teaching skills during the first year or two of supervised teaching. These tests, currently being piloted by states that belong to the consortium, will become the basis for granting a continuing professional license.

Finally, for experienced teachers, the standards for accomplished practice developed by the new National Board for Professional Teaching Standards—which are compatible with those developed by NCATE and INTASC—provide guidance for ongoing professional development. Teachers that undertake the National Board's challenging performance assessments can receive certification of accomplished practice that recognizes the high levels of expertise they have developed.

Although the work of these organizations may sound unglamorous, they offer the most powerful tools we have for reaching and rejuvenating the soul of the profession. Their standards and assessments examine and insist upon the attributes of effective teachers: subject matter expertise coupled with an understanding of how children learn and develop; skill in using a range of teaching strategies and technologies; sensitivity and effectiveness in working with students from diverse backgrounds; the ability to work well with parents and other teachers; and assessment expertise capable of discerning how well children are doing, what they are learning, and what needs to be done next to move them along. The standards reflect a teaching role in which the teacher is an instructional leader who orchestrates learning experiences in response to curriculum goals and student needs and who coaches students to high levels of independent performance.

These standards offer a cogent vision of teaching that helps to create new classroom realities. As teacher Ann Sayas noted of her experience in working for National Board Certification:

> Nothing, I repeat, nothing has forced me to examine my teaching practices as the National Board Certification process did. Nothing else has offered me a vision of what education could be like and opportunities to make the vision a reality. . . . The result is amazing to me: I am more excited about teaching than I have ever been. I no longer dream of moving up the ladder away from daily contact with my students. Not enough time exists to try all the possible ideas that examination of my own classroom has produced.[96]

In the Commission's judgment, these standards represent the new basics for accomplished practice; they include the essentials of effective teaching and focus attention on student learning. They may seem to be a tall order, but many excellent teachers are already teaching as they suggest, and some schools of education are preparing new cohorts of teachers so that they learn to do so. In the last ten years, since issues regarding the status of teaching were first brought to the public's attention,[97] a great deal of headway has been made in developing new standards for teaching, piloting and refining new assessments of teaching, and creating programs that serve as proof that substantially better education for students and teachers is possible. However, if these are to take hold and survive longer than in past eras of reform, policymakers must incorporate them into the policies that govern teaching and schooling.

To make expert teaching the rule rather than the exception, state and local policies should create a continuum of professional learning for teachers based on standards that guide teacher preparation and licensing, early induction, ongoing professional development, and advanced certification. To accomplish this, we recommend that states and local districts take the following steps:

- **Establish professional standards boards in every state.**

Developing coherent standards for teacher education, licensing, professional development, and practice requires a governing partnership between the public and the profession that is not vulnerable to constantly changing politics and priorities. Twelve states have already created boards for teaching like those that govern standard setting in other professions on the conviction that these boards are the best way to maintain rigorous standards and protect the public interest. Such boards are the conscience of each profession; they develop and enforce ethical codes as well as technical standards of practice. They should include accomplished teachers—ultimately, those who are National Board Certified—as well as teacher educators, administrators, and representatives of the public. In other professions, a national confederation of state boards develops common standards, high-quality assessments, and reciprocity agreements. Such a confederation in teaching should help develop common licensing assessments with professionally recommended cut-off scores, so that teachers command comparable skills and can move more easily from state to state.

How would a standards board help solve current problems? First, it would bring greater expertise to bear on the process of setting teaching standards and would do so in a more focused and steady fashion, as standards must be continually updated and reevaluated in light of growing professional knowledge. Second, it would allow the creation of a more coherent set of standards across teacher education, licensing, and ongoing professional development, since they would all be considered by the same body. Finally, it would create a firewall between the political system and the standard-setting process, allowing higher standards that are more connected to the professional knowledge base to be set and maintained. States with standards boards have shown that they enact and maintain more rigorous, professionally current standards than they had been able to do before the standards board was in place.

- **Insist on accreditation for all schools of education.**

States can most effectively ensure quality control over teacher education in partnership with the National Council for the Accreditation of Teacher Education, whose standards are aligned with emerging new standards for student learning as well as with those of the National Board and INTASC. NCATE's quality standards, recently revised and strengthened, are demanding, but not beyond the reach of any school of education genuinely committed to preparing excellent teachers for the classrooms of a new century. Schools that are serious about preparing teachers should take the necessary steps to become accredited. Those that are not willing and able to develop a critical mass of intellectual resources for training teachers should turn their attention to doing other things well.

Although teacher associations and states are increasingly willing to insist on accreditation for schools of education, the unfortunate truth is that some colleges are alarmed at the prospect of mandatory accreditation, fearing that what is in the public interest may not always coincide with institutional self-interest. It is time for states and higher education to stop playing shell games with ineffective program approval procedures and support professional accreditation by the turn of the century.

- **Close inadequate schools of education.**

The other side of the accreditation coin is that weak teacher preparation programs should be shut down. As everyone in higher education understands, accreditation amounts to a stamp of approval that a professional school is capable of delivering what it promises the public. After an initial visit, accrediting agencies provide institutions of higher education with ample time, technical assistance, and opportunity to correct shortcomings and shore up weaknesses. If schools, colleges, or departments of education are unable to do so, they should be closed to protect the public's interest in providing well-prepared teachers for all children. To those concerned about the American future, it is painful to hear that some training programs are so weak that their students belittle them, and school systems feel they must start all over again training their graduates. What is more painful is that the situation is tolerated. It should be no longer.

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Achieving NCATE Accreditation: The Price and the Prize

When the National Council for Accreditation of Teacher Education (NCATE) strengthened its standards in 1988, nearly half of the schools reviewed could not pass the "knowledge base" standard, which requires a school to be able to describe and enact a coherent knowledge base undergirding its programs. NCATE's evolving standards do not represent a comfortable status quo. They reflect serious program reform. To meet the standards, schools must

- Offer a coherent program of studies that will prepare effective teachers rather than a collection of courses based on what professors prefer to teach;
- Provide a full foundation in the liberal arts and teaching disciplines;
- Prepare candidates to teach children so they can achieve the student standards of professional associations like the National Council of Teachers of Mathematics;
- Prepare teachers who can work with diverse learners and with new technologies; and
- Ensure that candidates gain knowledge of effective learning and teaching strategies and demonstrate their skills in working with students.

About one in five schools of education are denied accreditation on their first attempt. Many have made sweeping changes to revamp courses, secure new resources, and strengthen teaching and are successful in their second attempt. Their experiences illustrate the power of accreditation to create a floor of quality for professional education.

John Carrier, vice president of Concord College in West Virginia, describes how accreditation made a difference in his institution:

The words stung like an ominous medical prognosis: "accreditation denied." It was May 1989, and Concord College had just been notified that we were no longer accredited under the aegis of NCATE, to which we had belonged since 1954. To Concord, questions about the value of accreditation are serious. The question was framed clearly by a youthful reporter, who when later informed of our achievement in regaining accreditation, asked forcefully, "So why is it important? What have you gained as a college?" We responded that we had secured the future of the program under the state board mandate, improved the program under the national reform agenda for teacher education, and enhanced Concord degrees within and outside the state. We believe we will be producing a better teacher through the reforms initiated in our drive for accreditation. These results, the prize, if you will, were, in our judgment, worth the price we paid.

Our reforms were based on: (1) ***New leadership****, including intensive involvement by the president and dean and a new director of teacher education; (2)* ***External review****, including the best advice from the literature on teacher education reform and critiques of our program by outside professionals; (3)* ***Comprehensive involvement by the faculty*** *to achieve the coherence and collaboration NCATE demanded; (4)* ***Self-reliance in program reform****—though important to us, we would not rely on past NCATE expectations, the state's standards for approval, our own higher education board's support, or appreciation of our situational difficulties by outside visitors from NCATE; and (5)* ***Nationally competitive program elements****. Our program had to measure up well when compared with programs in other states.*

By the time of the second review, the curriculum content, sequence, and delivery system reflected a model of the "Informed and Thoughtful Decision-Maker." It was intellectually defensible; well understood by students, faculty, and personnel in collaborating public schools; and an integrated statement of what we believe makes a good teacher. We developed reasonable and credible workloads for the faculty and their record for professional activities had increased to nationally competitive levels. The clinical program was revamped, and we added a Beginning Teacher Assistance Program. Multicultural dimensions missing previously were integrated into the programs. The result was recommended passage of all standards.

How did we meet the price for the prize in this instance? Reallocation of institutional resources was critical. Earlier neglect [of teacher education] was replaced by preferential budgetary treatment. Tomorrow's teachers cannot be prepared "on the cheap," or we will get, tragically, what we pay for. The prize is worth the price, a reachable goal, the problems solvable, and the challenge to leadership exciting. Like the journey of Columbus a half-millennium ago, the professionalization of teaching requires maximum commitment with few assurances about the outcome but a definite sense that something important is at stake and we dare not, cannot turn back.

Adapted from John P. Carrier, "Achieving NCATE Accreditation: The Price and the Prize," *Quality Teaching* 1, issue 3 (Spring 1992). Copyright © 1992 by the National Council for Accreditation of Teacher Education. Reprinted with permission.

- **License teachers based on demonstrated performance, including tests of subject matter knowledge, teaching knowledge, and teaching skill.**

An important change in the standards we recommend is that they describe what teachers should know and be able to do rather than listing courses that teachers should take. Performance-based licensing is the norm in other professions. Rather than dictating the curriculum of professional schools, they require rigorous tests to be sure professionals have the skills they need to serve their clients well, and they allow schools to organize courses in any way that achieves the desired outcomes.

In a performance-based licensing system for teaching, all candidates should pass tests of subject matter knowledge and knowledge about teaching and learning *before* they receive an initial license and are hired. They should then pass a performance assessment of teaching skills during their first year or two of supervised practice as the basis for a continuing license. We further recommend that states use common assessments with common, professionally set cut-off scores. This will give them the benefit of reciprocity with one another, thus greatly expanding the pool of teachers upon which they can readily draw.

State partners associated with the Interstate New Teacher Assessment and Support Consortium (INTASC) are already developing high-quality performance assessments of teaching knowledge and skill that, along with improvements in existing subject matter tests, constitute the foundations of an effective licensing system. The INTASC assessments require teachers to demonstrate that they understand the fundamentals of learning and teaching and that they can teach in the way that new student standards demand. With professional accreditation in place, states should reallocate scarce resources from program approval, which is redundant with accreditation, to the administration of high-quality licensing tests that measure actual ability to teach.

In a performance-based system, teacher education programs should be accountable for enabling their graduates to meet the standards. Alternate routes to teaching, such as postgraduate programs for midcareer recruits, should meet the same standards as traditional programs: Their candidates should pass the same assessments before they enter teaching, and programs should show that they prepare candidates to do so successfully. This will allow greater innovation and diversity in teacher training without jeopardizing the welfare of students. A single standard that assesses genuine readiness to teach rather than regulating the content of courses would mean that states could stop issuing substandard teaching licenses that sanction deficiencies in preparation, and parents and students would be assured that anyone who has earned the title "teacher" has the essential skills to teach.

- **Use National Board standards as the benchmark for accomplished teaching.**

It has always been difficult to recognize and reward good teachers in ways that are credible and objective. The merit pay plans of the 1980s (like those of

The Interstate New Teacher Assessment and Support Consortium (INTASC): Linking Student Standards to Teaching Standards

The INTASC standards for teacher licensing are organized around ten principles that reflect the core knowledge, skills, and dispositions teachers should develop in order to teach in the ways that new standards for students demand. These include:

- Knowledge of subject matter and how to make it accessible to students;
- Understanding of how to foster learning and development;
- Ability to create learning experiences adapted to the needs of diverse learners;
- Use of teaching strategies that foster critical thinking, problem solving, and high levels of performance;
- Ability to create a positive, purposeful learning environment;
- Knowledge of how to foster effective communication and collaboration in the classroom;
- Ability to plan instruction based on subject matter, students, curriculum goals, and the community context;
- Understanding and skilled use of a wide array of assessment strategies;
- Ability to reflect on, evaluate, and improve teaching and learning;
- Ability to collaborate with colleagues and parents to support student learning.

INTASC's new performance assessments draw upon these standards and the student standards in each subject matter field to evaluate the extent to which beginning teachers can teach effectively. In mathematics, for example, the tasks teachers undertake for their INTASC performance assessment directly reflect the curriculum standards of the National Council of Teachers of Mathematics (NCTM), which focus on math as problem solving, communication, reasoning, and connections. Teachers must be able to foster mathematical insight in students and help them to apply sophisticated mathematical reasoning to problems, rather than teaching largely by rote. In the current pilot assessments, teachers show how they can do these things by completing the following tasks for their portfolio:

TASK 1: PLAN AN INSTRUCTIONAL UNIT with an emphasis on how problem solving, reasoning, communication, and connections form the structure of the unit. Show how you use tools including manipulatives and technology. Reflect on and revise the instruction.

TASK 2: TEACH A LESSON TO A CLASS that addresses a particular concept or procedure. Teacher-student discourse should be highlighted in a video from the lesson. Evaluate the nature of mathematical discourse and give evidence of the kinds of learning that took place.

TASK 3: ASSESS LEARNING for the purposes of diagnosis, instructional feedback, and grading. The different methods should address mathematics processes as well as products.

TASK 4: CONDUCT AND ANALYZE A SMALL GROUP LESSON in which students work in small groups and use manipulatives for problem solving or reasoning. Student-student discourse should be highlighted in a video from the lesson.

TASK 5: ASSESS MATHEMATICAL POWER as demonstrated in students' work in problem solving, reasoning, mathematical communication, mathematical understanding, and mathematical dispositions. Plan instruction based on your findings and your knowledge of the students.

TASK 6: DEVELOP AS A PROFESSIONAL by describing how you collaborated with other professionals, analyzed your own teaching, and contributed to the professional mathematics community. Establish professional goals and develop a plan for continued development.

This kind of assessment promises to create a licensing process that both identifies competence and shapes preparation and practice in ways that will ultimately support student learning more powerfully.

Adapted from Interstate New Teacher Assessment and Support Consortium (INTASC), *Model Standards for Beginning Teacher Licensing and Development: A Resource for State Dialogue, Working Draft* (Washington, D.C.: Council of Chief State School Officers, 1992); and Interstate New Teacher Assessment and Support Consortium (INTASC), *Model Standards in Mathematics for Beginning Teacher Licensing & Development: A Resource for State Dialogue, Working Draft* (Washington, D.C.: Council of Chief State School Officers, 1994).

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the 1950s and 1920s) have already disappeared because local evaluators did not have useful standards, or the time or expertise, to make reliable judgments about teacher competence. Many such plans created distrust and competition among teachers rather than supporting better practice.[illegible] In contrast, the careful process of National Board Certification—based on evaluation by experts according to well-developed standards and a collaborative process—provides an alternative that teachers find credible, helpful, and an extraordinary learning experience.

Analogous to the process of board certification in medicine, the National Board's standards represent a widely shared consensus about state-of-the-art practice. They are the basis for sophisticated performance assessments that allow veteran teachers to demonstrate their expertise by submitting videotapes of their teaching, lesson plans, and other samples of their own and their students' work. In assessment centers, teachers evaluate texts and teaching materials, analyze teaching situations, assess student learning and needs, and defend teaching decisions based on their knowledge of subjects, students, curriculum, and pedagogy. Teachers who have experienced the board's assessments believe the process captures good teaching and say it provides an extraordinary learning experience because it focuses all of their attention on how their decisions affect students. As states and districts begin to recognize certification as an indicator of high-level competence for purposes of hiring, evaluation, compensation, and advancement, the standards will have increasing practical effect and reach.

National Board standards should become a cornerstone for teacher development and evaluation. Some states have already decided to accept National Board Certification as fully meeting state licensing requirements for veteran teachers who cross state lines, for renewal of a license, or the award of an advanced license. Some states and districts, like Georgia, Kentucky, North Carolina, and Ohio, are acknowledging certification through financial incentives or salary bonuses; others are proposing to use certification as an indicator of qualification for roles such as mentor teacher, principal, or cooperating teacher educator. Districts like Rochester, New York, and Palo Alto, California, have incorporated National Board standards and processes, including teacher portfolios and peer coaching, as part of their teacher evaluation systems. All these strategies help to create a coherent continuum of professional learning based on common professional standards.

Standards are valuable not only in the context of formal certification systems. They can inform professional development efforts ranging from graduate school courses to local seminars and videotape groups that allow teacher to see the standards in action and reflect on their own practice. Graduat schools can organize advanced master's degree programs around the Nationa Board standards. Within schools, vivid descriptions of good teaching can hel teachers improve what they do in their daily work. It is when standards ar regularly used in this way, as well as to stimulate better preparation and ongoing professional development, that they will come alive in classrooms acro the nation.

The National Board's Standards

National Board Certification lets people see what teaching can be. I think that good teaching is an ability to take subject matter expertise, which is one vital component of teaching, and actually transform that into the classroom with the students you have—to make that bridge between your subject and the students' own backgrounds. And that's no easy trick.

— *Brady Kelso, English teacher*

Brady Kelso, an English teacher at Scripps Ranch High School in San Diego, California, was one of the first teachers certified by the National Board for Professional Teaching Standards. A 13-year veteran, Kelso found that the process of assembling a portfolio of his teaching and students' learning "gave me an opportunity to rethink. . . . Looking carefully at my plans and then doing the case studies to follow the kids was good. . . . For me it was a validation of the work that I'd done."

Rick Wormeli, an English teacher at Herndon Middle School in Virginia, agrees. He credits the process of Board Certification with encouraging him to integrate other subjects into his lessons, rethink the organization of reading discussion groups, and use vocabulary words from his students' work in lieu of a book listing words out of context. Even after he'd finished the assessment, he continued to experiment with changes. "I can't turn it off," he noted.

The National Board's standards and assessments help teachers reflect on and learn from their practice. They are based on five major propositions that teachers and researchers agree are essential to accomplished teaching:

1. Teachers are committed to students and their learning. National Board-Certified teachers are dedicated to making knowledge accessible to all students. They adjust their practice based on students' interests, abilities, skills, and backgrounds. They understand how students develop and learn.

2. Teachers know the subjects they teach and how to teach those subjects to students. National Board-Certified teachers have a rich understanding of the subject(s) they teach, and they know how to reveal subject matter to students. They are aware of the knowledge and preconceptions that students typically bring. They create multiple paths to knowledge, and they can teach students how to pose and solve their own problems.

3. Teachers are responsible for managing and monitoring student learning. National Board-Certified teachers create settings that sustain the interest of their students. They command a range of instructional techniques and know when each is appropriate. They know how to motivate and engage groups of students. They use multiple methods for measuring student growth and can clearly explain student performance to parents.

4. Teachers think systematically about their practice and learn from experience. National Board-Certified teachers critically examine their practice, seek the advice of others, and draw on educational research to deepen their knowledge, sharpen their judgment, and adapt their teaching to new findings and ideas.

5. Teachers are members of learning communities. National Board-Certified teachers work collaboratively with other professionals. They use school and community resources for their students' benefit. They work creatively and collaboratively with parents, engaging them in the work of the school.

Shirley Bzdewka, a teacher at Dayton School in Dayton, New Jersey, sums up the effect of her Board Certification experience this way:

I'm a very different teacher now. I know I was a good teacher. But I also know that every teacher always has a responsibility to be better tomorrow than they were today, and I am a much more deliberate teacher now. I am much more focused. I can never, ever do anything again with my kids and not ask myself, "Why? Why am I doing this? What are the effects on my kids? What are the benefits to my kids?" It's not that I didn't care about those things before, but it's on such a conscious level now.

Sources: Adapted from Ann Bradley, "Pioneers in Professionalism," *Education Week* 13 (April 20, 1994): 18-21; "What Price Success?" *Education Week* 15 (November 22, 1995): 1. Copyright © 1994, 1995. Excerpts reprinted with the permission of *Education Week*. The National Board for Professional Teaching Standards (NBPTS), *What Teachers Should Know and Be Able to Do* (Detroit, Mich.: NBPTS, 1994).

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The education of teachers must be driven by a clear and careful conception of the educating we expect our schools to do, the conditions most conducive to this educating (as well as the conditions that get in the way), and the kinds of expectations that teachers must be prepared to meet. Further, the renewal of schools, teachers, and the programs that educate teachers must proceed simultaneously.

— John Goodlad,
Professor of Education,
University of Washington

II. Reinvent teacher preparation and professional development.

WE RECOMMEND: ***that colleges and schools work with states to redesign teacher education so that the two million teachers to be hired in the next decade are adequately prepared and all teachers have access to continuous high-quality learning opportunities.***

More new teachers will be hired in the next decade than in any previous decade in our history. If they are adequately prepared at the beginning of their careers, most of the band-aids and stop-gap efforts now required should prove to be irrelevant in the future. In addition, if teachers have continuous access to the latest knowledge about teaching and learning, they will be better able to respond to the toughest learning problems and the challenge of meeting ever higher standards. For this to occur, several changes are essential.

- **Organize teacher education and professional development programs around standards for students and teachers.**

If teachers are to be prepared to help their students meet the new standards that are now being set for them, teacher preparation and professional development programs must consciously examine the expectations embodied in new curriculum frameworks and assessments and understand what they imply for teaching and for learning to teach.

Among other things, teaching to the new standards will require

1. Stronger disciplinary preparation that incorporates an understanding of a discipline's core concepts, structure, and tools of inquiry as a foundation for subject matter pedagogy;
2. Greater focus on learning and development, including strategies for responding to different stages and pathways for learning;
3. More knowledge about curriculum and assessment design as a basis for analyzing and responding to student learning;
4. Greater understanding of how to help special-needs students and address learning differences and disabilities;
5. Multicultural competence for working in a range of settings with diverse learners;
6. Preparation for collaboration with colleagues and parents;

7. **Technological skills** for supporting student learning and professional learning in the Information Age; and

8. **Strong emphasis on reflection and inquiry** as means to continually evaluate and improve teaching.

Schools of education and other sources of professional development need to model how to teach for understanding in a multicultural context, how to continually assess and respond to student learning, and how to use new technologies in doing so. They need to organize their work to promote the attainment of student standards through the use of teaching standards that are grounded in contemporary knowledge about learning and teaching. To accomplish this we recommend that colleges:

- **Develop extended teacher preparation programs that provide a yearlong internship in a professional development school.**

Over the past decade, many schools of education have incorporated new knowledge about teaching and learning in their programs for prospective teachers. Structuring the experience of learning to teach so that it is actually effective has required a number of changes from traditional practice.”

First, successful teacher preparation programs aim to develop a foundation for continual learning about teaching—the capacity to analyze learning and examine the effects of contexts and teaching strategies on students' motivation, interest, and achievement—rather than aiming only to transmit techniques for managing daily classroom activities. This requires building a strong foundation of knowledge about learning, development, motivation, and behavior, including their cognitive, social, and cultural bases. It also requires creating cases and other inquiries that allow students to use this knowledge in applied contexts—to gather information, analyze and learn from their knowledge, and use what they have learned to assess situations and improve instruction. This kind of preparation is essential if teachers are to work productively with diverse learners.

Second, greater attention is paid to developing high-quality clinical learning opportunities in schools that are closely connected to the teacher preparation curriculum. A coherent program of mentoring and instruction by school and university faculty is essential if teacher education is to be a powerful intervention in the experience of prospective teachers. In the long run, universities should focus as much on building strong clinical training and induction programs—including preparing and supporting cooperating teachers and mentors so that they become excellent teachers of teachers and partners in the teacher education process—as they do on the direct instruction of new teachers in courses.

Third, teacher educators serve as bridges between disciplinary and pedagogical coursework so that a solid platform for content pedagogy can be built. More integrated approaches combine attention to learning the disciplines and teaching the disciplines. These should increasingly take into account the changing conceptions of curriculum and assessment embodied in new standards.

Finally, coursework and clinical experiences continually exhibit 21st-century ways of working. They feature technology and teamwork in all that they do, including partnerships with parents as well as work with colleagues.

One of the major structural innovations supporting these improvements in teacher education has been the development of extended programs that add a year (and occasionally two) of graduate-level preparation beyond the traditional four-year undergraduate degree. Graduate-level teacher education has been adopted in many other countries over the last decade and has begun to spread in the United States through the efforts of the Holmes Group of education deans, the National Network for Educational Renewal, and the American Association for Colleges of Teacher Education.

Extended programs allow beginning teachers to complete a bachelor's degree in their subject *and* acquire a firmer grounding in teaching skills, including the knowledge of learning and students' special needs that are growing increasingly important for teaching success. Some are five-year models that allow an extended program of postbaccalaureate preparation for undergraduates interested in teaching. Others are one- to two-year graduate programs serving either recent graduates or midcareer recruits.

In either case, because the fifth year allows students to devote their energies exclusively to teacher preparation for at least a year, these programs allow for extended practice teaching in schools tightly tied to relevant coursework. Such internships permit integration of theoretical and practical learning, providing a much more compelling context for developing skilled and thoughtful practice. Although a very few four-year teacher education programs have been able to create conditions for more extensive student teaching in which coursework is tightly tied to practice, most do not have sufficient control over a large enough segment of their students' overall curriculum to ensure that candidates encounter important knowledge for teaching in ways that make it useful and well used.[100]

Recent studies show that graduates of these extended teacher education programs are rated by principals and teaching colleagues as much better prepared and more effective than graduates of four-year programs, and they are as confident and effective in their teaching as more senior colleagues. They also are significantly more likely to enter teaching and remain in the profession after several years. Studies have found that extended program graduates enter teaching at rates consistently above 90% as compared with 60% to 80% for four-year graduates, and they remain in teaching after several years at rates typically over 80% as compared with 50% to 70% for four-year graduates.[101]

Earlier concerns about the costs of graduate-level programs should now be reevaluated in light of evidence that they appear to produce a much higher yield on their investments. These findings suggest that funds for teacher education could be more productively concentrated on high-quality preparation for serious candidates in professional schools, rather than diluted across many less certain and committed recruits who also are more weakly prepared and less likely to remain in the profession.

Early concerns that such programs would be inaccessible to prospective teachers of color seem not to have materialized. Overall, the enrollments of most graduate-level teacher education programs are noticeably more diverse than those of undergraduate programs.[182] This is partly because master's degree programs have been aggressive about recruitment and also because many recruit from pools that include recent graduates, midcareer entrants, and military and business retirees. They often tailor their offerings in more flexible ways that

Teacher Education for the 21st Century: Teaching for Understanding Using New Technologies

Since 1990, Magdalene Lampert and Deborah Ball have combined their teaching of mathematics in third- and fifth-grade elementary school classrooms with their work as teacher educators. Using hypermedia technology, they have begun closing the gap between theory and practice by bringing the classroom into the university. Their work at Michigan State University and the University of Michigan in the Mathematics and Teaching through Hypermedia (MATH) project has allowed new and in-service teachers to look at what it means to teach toward new student standards by engaging in sustained investigations of practice using video and computer technology.

Lampert's and Ball's elementary school teaching is explicitly focused on helping students to understand and use mathematics in the ways suggested by the new NCTM standards—focusing on reasoning and problem solving rather than the rote work that characterizes most mathematics classrooms. They have videotaped their teaching over the course of a year and have entered these tapes along with other classroom data—lesson plans, students' work, assignments, curriculum materials, and assessments—into a hypermedia platform. This makes it possible for users of the MATH project to see and study examples of actual teaching in its natural context over time. Together, students can examine a case of teaching, analyze what is happening, ask questions, and seek answers. These investigations of teaching help teacher candidates conduct their own research, look carefully at student learning in relation to teaching decisions, and examine curriculum and assessments firsthand rather than in the abstract.

"By using videos of real-time teaching," explain Lampert and Ball, "we seek to represent the complexities involved in the moment-by-moment problems of practice. We hope to affect users' assumptions about what teachers need to know to teach elementary school mathematics [and] to support investigations of teachers—work that adequately reflect the messiness of practice in the classroom. . . . Technology makes it possible to manipulate such materials of practice in constructively imaginative ways: a child's presence in September can be arrayed for comparison next to her stance in May; patterns of teacher-student dialogue can be analyzed across time."

Users can stop and replay the tape to look at events closely, connect what is happening in the lesson with teachers' and students' writing about what they were doing, look at student performance, and keep track of their own ongoing interpretations. In this way, hypermedia supports in-depth analysis of teaching decisions that are often difficult to capture when discussed out of context. Looking at the patterns of classrooms—tone and timing, the expressions of children, a teacher's style—is crucial in learning to teach, because so much of teaching entails hearing and seeing as well as interpreting such information. Access to rich data about the work of teachers *and* the learning of students makes it possible for prospective teachers to build their own detailed knowledge of how to teach diverse learners in ways that lead to greater understanding.

Sources: Magdalene Lampert and Deborah K. Ball, "Using Hypermedia to Investigate and Construct Knowledge about Mathematics Teaching and Learning," in *Mathematics And Teaching through Hypermedia* (Ann Arbor, Mich.: The MATH Project, 1995); and "Aligning Teacher Education with Contemporary K-12 Reform Visions" (paper prepared for the National Commission on Teaching & America's Future, October 1995).

acknowledge previous education and experience.

Here's my proposal. Let's try something new. This year, instead of following the old formula, hold back ten cents of every dollar and earmark it for strategic investments. Where would we put this $15 billion to work? If it were me, I'd invest a portion of it in moving teacher training out of the horse-and-buggy era. We expect doctors to get their training in teaching hospitals. We wouldn't send an NBA player onto the court if his only training consisted of lectures on the theory of the jump shot, case studies of the fast break, and films of games played years ago.

— *Louis V. Gerstner Jr.*,
chairman and CEO, IBM Corporation

In tandem with these new program initiatives, more than 200 (out of 1,200) schools of education have created "professional development schools" that, like teaching hospitals in medicine, provide new recruits with sites for intensively supervised internships where they can experience state-of-the-art practice that is linked to their coursework. They also provide sites for research by school- and university-based faculty, creating more powerful knowledge for teaching by putting research into practice and practice into research.[163]

Furthermore, professional development schools create new ways for colleges and school systems to work together around instructional reform, creating greater common ground and leveraging improvements in both settings. In Cincinnati, Ohio; Louisville, Kentucky; San Antonio, Texas; and many other cities, a growing number of new teachers are prepared in professional development schools associated with local universities, thus providing direct pathways from training to hiring for well-prepared entrants and creating a cadre of new teachers who are prepared to undertake immediately the kinds of teaching the district is seeking to encourage. The power of professional development schools for leveraging reform is that they sit at the intersection of universities and schools and of preservice and in-service development for teachers. Thus, they provide the means by which schools and colleges of education can simultaneously redesign their work.

The nation needs many more professional development schools, because these partnerships between higher education and local schools, by harnessing theory to practice, improve both. As with teaching hospitals in medicine, government support will be needed to create enough professional development schools to support high-quality training for all entering teachers.

States should encourage the creation of innovative programs consistent with the recommendations throughout this report. There is an urgent need to accelerate changes in teacher education so that new models of exemplary practice are visible across the country. One approach to this goal is for governors, state boards of education, deans, faculty, and university presidents to designate selected institutions as charter colleges of education. Such colleges would be free of selected regulations and procedures so they could make the curricular, staffing, and other changes necessary to demonstrate best practice in all aspects of their work. As these are evaluated, changes that prove successful should inform statewide policy for teacher education.

• Create and fund mentoring programs for beginning teachers, along with evaluation of teaching skills.

Even with more extensive preservice teacher preparation, the beginning year of teaching presents new challenges and problems for all teachers that pose a steep learning curve. Like doctors in their medical residency, teachers who have the support of a more senior colleague and opportunities for continuing their learning become more skilled more quickly. Research shows that beginning teachers who have had the continuous support of a skilled mentor are much more likely to stay in the profession and much more likely to get beyond classroom management concerns to focus on student learning.[104] All beginning teachers should be assigned a skilled mentor. Effective mentors should be selected for their outstanding teaching ability and be given the necessary training and released time to work productively with their new colleagues.

Ideally, the first year or two of teaching should be structured much like a residency in medicine, with teachers continually consulting a seasoned veteran in their teaching field about the decisions they are making and receiving ongoing advice and evaluation. In the quality control system we propose, teachers will have completed the first stage of licensing tests—examinations of subject matter and basic teaching knowledge—and will be ready to undertake the sec-

Trinity University: A Case of Teacher Education Reform

"We've fiddled with the curriculum, we've fiddled with testing, and we've fiddled with finance, but we haven't done anything to get better teachers in American classrooms," observes John Moore, chair of the education department at Trinity University in San Antonio, Texas.

Acting on the belief that teacher quality is the key to educational improvement, Trinity replaced its traditional, four-year education major with five years of preparation nearly ten years ago. The new program integrates more arts and sciences courses with educational coursework to ensure solid disciplinary grounding and attention to content pedagogy. Students receive a bachelor's degree in their academic discipline before they go on to complete a Master of Arts in Teaching. The program also adds a full-year teaching internship for student teachers, which takes place in professional development schools where expert, veteran teachers join with university faculty to provide a supportive, realistic initial teaching experience.

Four schools in the San Antonio area have joined with Trinity in the Alliance for Better Schools. As professional development schools, they are places where theory-based practices are researched and developed, interns receive preparation for teaching, and professional development activities for surrounding schools are held. Sixty classroom teachers from these schools are appointed as clinical faculty at Trinity. They help provide clinical experiences for Trinity students in each of the five years of the program, beginning with classroom observations and culminating with the full fifth-year internship.

Teachers who serve as mentors to student teachers receive an extra planning period each day to work with the beginners and to collaborate with college faculty in designing new curriculum and restructuring school practices. At Nathaniel Hawthorne, for example, an inner-city school once plagued by high student transfer rates and low achievement, elementary teachers in the Trinity program devised a program called the "collaborative," in which students would progress through the grades as a single group and teachers would use common methods based on their analysis of the latest education research. Within a few years, the student mobility rate in the collaborative has declined to 2% as compared with a 59% annual mobility rate for the school overall, and test scores have gone up. The other professional development schools show similar measurable progress toward reform and renewal.

Outcomes of Trinity's program are impressive. Candidates rate the program extremely highly, as do employers. Graduates are eagerly sought out, and 100% are placed in teaching positions, most in San Antonio. As a group, they are extraordinarily successful, winning numerous awards for their teaching from their very first years in the classroom. "In terms of recruiting, training, and renewing teachers, Trinity is one of the most impressive efforts in the nation," Ernest Boyer, the late president of the Carnegie Foundation for the Advancement of Teaching, observed. Trinity's efforts demonstrate how a strong teacher education program can yield important benefits for the community as a whole.

Sources: John H. Moore, "Teacher Education at Trinity University: Program Conceptualization and Development" (March 23, 1995); Gary Putka, "Making the Grade: Teacher Quality Rises With Improved Pay, Concern for Schools," *The Wall Street Journal* (December 5, 1991).

ond stage—an examination of teaching skills conducted through a structured performance assessment that they work on in their first year.

Connecticut's mentoring and performance assessment program (described later) is a prototype for this approach. It provides mentors for all beginning teachers and seminars organized around the state's performance assessments for receiving a continuing professional license. In Minnesota, where professional development schools are among the sites for first-year teaching residencies, the plan is for all beginning teachers to teach 80% of the time under the supervision of mentor teachers and to engage in professional development the remaining 20% of the time. During their first year, they will be evaluated for a continuing teaching license.

Another highly successful model can be seen in school districts that have followed Toledo, Ohio's lead in developing thoughtful, comprehensive programs for supporting beginning teachers. The Toledo model—now used in Cincinnati and Columbus, Ohio; Rochester, New York; and Seattle, Washington—funds expert veteran teachers to work intensively with beginners in their fields and to contribute to serious tenure decisions. In several of these cities, many beginning teachers have completed a yearlong internship in a professional development school before they are hired; then they are assigned a consulting teacher mentor in their first year of teaching. These approaches represent the beginning of a real professional development track for teaching—one that has great potential for creating world-class teachers from the beginning of their careers.

In all of these cases, the programs serve two functions: New teachers receive sustained assistance, and those who do not become competent are counseled out before they receive a continuing license or tenure. This allows systems to invest in useful professional development after tenure, rather than wasting funds on annual evaluations to check for basic competence. Whatever the model, the evidence is clear: Supports for new teachers help them continue their learning during a critical period, one which makes a tremendous difference in the kind of teacher they eventually become and the kind of experience their students have.

- **Create stable, high-quality sources of professional development.**

Ultimately, the quality of teaching depends not only on the qualifications of individuals who enter teaching, but also on how schools structure teaching work and teachers' learning opportunities. Teachers who feel they are enabled to succeed with students are more committed and effective than those who feel unsupported in their learning and in their practice.[105] Those who have access to new knowledge, enriched professional roles, and ongoing collegial work feel more efficacious in gaining the knowledge they need to teach their students well and more positive about staying in the profession.

The critical importance of career-long professional development is finall being recognized. A comprehensive report outlining the components of a pro fessional development system, *Teachers Take Charge of Their Learning*, ha recently been released by the National Foundation for the Improvement of Education (NFIE), and we endorse its major findings and recommendations.[106] The report details how high-quality professional development for teachers directly influences student learning, and it recommends a series of steps to make such professional development widespread, including school-based professional development that attends to the needs and achievement of students and the attainment of professional teaching standards; teacher engagement in peer assistance and review as well as other expanded roles; the integral use of information technologies in teaching and teacher development; and more flexible scheduling along with an extended school year for teachers to provide time for professional development.

NFIE defines high-quality professional development as that which

- Has the goal of improving student learning at the heart of every school endeavor;
- Fosters a deepening of subject matter knowledge, a greater understanding of learning, and a greater appreciation of students' needs;
- Helps teachers and other staff meet the needs of students who learn in different ways and who come from diverse cultural, linguistic, and socioeconomic backgrounds;
- Provides adequate time for inquiry, reflection, and mentoring, and is an important part of the normal working day;
- Is rigorous, sustained, and adequate to the long-term change of practice;
- Is directed toward teachers' intellectual development and leadership;
- Is teacher designed and directed, incorporates the best principles of adult learning, and involves shared decisions designed to improve the school;
- Balances individual priorities with school and district needs;
- Makes best use of new technologies; and
- Is site-based and supportive of a clearly articulated vision for students.

These features are rare in professional development today. Most professional dollars are spent either reimbursing teachers for courses that may not be directly related to school needs or their classroom responsibilities or for district-determined workshops with even less connections to teachers' own practice. As traditionally organized, in-service education—usually conducted as

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mass-produced hit-and-run workshops—is not well suited to helping teachers with the most pressing challenges they face in deepening their subject matter knowledge, responding to student diversity, or teaching more effectively.

There is a mismatch between the kind of teaching and learning teachers are now expected to pursue with their students and the teaching they experience in their own professional education. Teachers are urged to engage their students in actively building their understanding of new ideas; to provide opportunities for practice and feedback as well as for inquiry, problem solving, collaboration, and critical reflection; to connect knowledge to students' developmental stages and personal experiences; and to carefully assess student learning over time. These desirable characteristics of teaching are usually absent in the learning afforded to teachers. There are few parallels between how teachers are expected to teach and how they are encouraged to learn.

Although most teachers experience very few useful, relevant learning opportunities, school systems spend substantial amounts of money on professional development every year, much of it unplanned, a lot of it unnoticed, practically all of it uncoordinated. Central offices manage a professional development fund. Hidden in federal, state, and district programs, large and small, are other pots of money for professional development. By offering salary credit to teachers for practically any coursework they take, districts provide huge subsidies for professional development, whether or not the courses move the mission of the school forward.

A district examination of professional development funding in Flint, Michigan, recently revealed that the nominal district allocation of about $300,000 ballooned to $13 million annually, about 6% of the district budget, when every source of support direct and indirect spending was itemized.[107] Another study in Los Angeles estimated that 22% of teacher salaries, or $253 million, could be attributed to salary point credits earned by taking courses.[108] Paraphrasing the late Senator Everett Dirksen: A couple of million here, a couple of million there, and pretty soon you're talking about real money.

These funds need to be organized around a coherent scheme of professional development that works to improve teaching. New resources should be invested in vehicles that offer relevant, sustained learning for teachers. To accomplish this, states and districts need to do the following:

- **Allocate at least 1% of state and local education funding** to be consistently devoted to high-quality professional development organized around standards for student learning and for accomplished teaching practice. States should also provide matching funds for districts to increase their investments in professional development to 3% of total expenditures.

- **Organize new sources of professional development** such as teacher academies, school-university partnerships, professional development schools, and networks for learning across schools.

A Better Way: Professional Development That Improves Teaching

"Staff training is terribly important for reform to work," notes Pat Rice, principal of Withrow High School in Cincinnati, Ohio. "Look at medicine. Doctors are learning new surgical techniques all the time. If you're going to have a gallstone removed, wouldn't you rather they zap it with a laser than cut you open with a knife?"

Teacher Academies

"The old paradigm of teaching was that you prepared a lesson, you taught it the best way you could, and you covered the curriculum," Rice observes. Now, good teaching is judged by how much learning occurs, she explains. This means staff must keep abreast of new developments, a task made easier by Cincinnati's Mayerson Academy, a staff development center endowed by the business community and run by a local board of teachers and administrators.

"One thing we know about professional development is that it's not worth anything if there isn't ongoing follow-up and support all the time. It can't be inconsistent and it can't be one-shot programs," says Michael Rutherford, Mayerson's executive director. Therefore, Mayerson offers six-week courses dealing with the latest learning about curriculum, instruction, and classroom management, followed up by "action labs" that address specific topics like cooperative learning strategies, cultural diversity, and school improvement. Study groups and school teams meet at the academy, and teachers can use state-of-the-art technologies to see master teachers at work in their classrooms.

One kindergarten teacher notes, "I've come every summer. I've been teaching 21 years, but you can always learn something new. Most teachers come out at least once a year. And sometimes you can come as a whole school." Another teacher remarked, "We get teachers together. There's a whole lot of talk that goes on in the hall—it starts in there and it continues out here."

Teacher Networks

When Linda Starkweather applied to participate in the North Carolina Capital Area Writing Project Summer Institute in 1994, she had no idea what the outcome would be. Based on the philosophy that teachers can best teach teachers, local chapters of the National Writing Project offer monthlong summer institutes at 160 sites. Teachers of all grade levels and subjects come together to demonstrate successful practices, respond to one another's work, discuss current research, and practice their own writing.

Linda was so inspired by this experience that when she returned to her school in the fall, she demonstrated one of the lessons she'd seen and asked her colleagues to make presentations of lessons they had developed for their students. The teachers responded with enthusiasm: At the next professional development day, 15 teachers, and parents offered nine workshops to their colleagues. Teachers who were used to working in isolation were so enlivened by the process that "the walls came tumbling down" as they published their ideas in the staff newsletter and began sharing resources. Notes Linda, "All of a sudden, people were talking about learning. Instead of becoming burned out, we were becoming more creative. What happened was more than just intellectual renewal. The whole spirit of the school changed. It became a joyful place where the adults are excited about learning, and that excitement spreads to the students."

School-University Partnerships

The Southern Maine Partnership links three local colleges with 27 public school districts and three private schools. Shaped by the needs and interests of its participants the partnership is like a neighborhood in which university and school people are constantly in touch with each other about practices, ideas, and issues that affect students' learning.

Activities include mini-grants to teachers to develop and share new assessments of student learning; "Dine and Discuss" evenings at which university and school faculty gather around dinner to discuss texts that inform their work; "Tool Box Sessions" at which teachers share successful teaching practices and materials; and visits to classrooms to look at teaching. In addition, the University of Southern Maine places its student teachers in professional development schools in nine districts, working closely with experienced cooperating teachers in delivering coursework at the school site.

As a result of this work, 50 schools and six districts have improved their assessment and accountability systems. Many have improved their curricula in literacy, math, and science as teachers work with engineers, scientists, and university faculty. Fourteen high schools have restructured schedules to extend student time for learning. Five small districts have formed an alliance to pool resources to improve learning opportunities for students and teachers. College-level courses are made available to high school students, and high school students have started a Student Congress. The students recently submitted a position paper they wrote on high schools to the governor and state legislature, demonstrating that in Maine, collaboration on school reform is for everyone.

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- **Make ongoing professional development part of teachers' daily work** through joint planning, research, curriculum and assessment work, study groups, and peer coaching.

Districts and schools should use a major portion of their professional development funds to engage teachers in productive approaches to professional development that involve teachers in professional communities beyond their classrooms.[109] These communities can be organized across subject matter lines, like the National Writing Project; around significant pedagogical issues, like the Performance Assessment Collaboratives in Education; or in support of particular approaches to school reform, like the School Development Program or the Coalition of Essential Schools. They may be departments or teams within schools or networks and school-university partnerships that allow teachers to work together across schools. In any case, they provide opportunities for teachers and other educators to share ideas about teaching and school change, to learn from one another as well as from experts, and lend support to the risk taking that is part of the process of any significant change.[110]

In addition, states and districts should consider establishing teacher academies to support professional development focused on instructional change and schoolwide reform. Successful examples include the Gheens Academy in Louisville, Kentucky, and the Mayerson Academy in Cincinnati, Ohio. Both were established with external corporate or foundation grants; provide a special facility and staff for high-quality, sustained professional development activities; draw on the expertise of local teachers and principals as well as university faculty; and pursue an agenda focused on school reform priorities worked out jointly by teachers and the district. Statewide academies, like the North Carolina Teacher Academy, also provide intensive institutes aimed at skill building and problem solving for school teams as well as the development of teacher leaders to work with other teachers. These institutions have shown how systemwide goals for change can be connected to teachers' desires for continuous professional development that moves beyond "flavor-of-the-month" workshops to support transformations in practice.

Districts should treat professional development as the core function of management, designing a dense network of peer relationships within and across schools that are used to expand knowledge. Problems should be tackled by a combination of practitioners working together across classroom and school boundaries, visiting and observing one another in successful settings, modeling instruction and working with one another as consultants, talking about common instructional problems, and using analyses of student work and new standards as the center of professional discourse.[111]

As we describe later, teachers' time for learning, as well as ongoing collaboration and joint planning, should be supported by redesigned school schedules, structures, and staffing so that teachers can work smarter and students can consistently encounter high-quality instruction.

The East Carolina University Peer Coaching Project

Both of us found it helpful to imagine new approaches to familiar teaching situations and to have another teacher with whom we could stretch out our thinking. When two heads get together, one thought leads to another in exciting ways. Margaret told me that the support and collaboration was very valuable to her because, even though she was a veteran teacher, she realized that she needed new methods with this particular group of students. And the students benefited tremendously, because they themselves were so involved in the process of refining Margaret's teaching philosophies and practices.

— *Noela Woodall, peer coaching participant, Benson Elementary School, North Carolina*

The East Carolina University Peer Coaching Project Consortium was formed as an alternative to North Carolina's state-mandated checklist for teacher evaluation. Diane Houlihan began in 1991 working with six pairs of teachers in the Johnston County School System to share ideas, watch each other teaching, and conduct classroom research. Each of these 12 teachers coached another teacher the following year. By 1995, 245 teachers in three country districts were working together in peer coaching partnerships.

The peer coaching process puts teachers in charge of their own learning. When Noela Woodall, a third-grade teacher, began coaching Margaret Adams, also a third-grade teacher at the same school, they began by discussing Margaret's goals for the year. Margaret's short-term goal was to help her students learn to move more smoothly between activities. Her long-term goal was to teach her students to participate in parent-teacher conferences by talking about the work they had compiled in their portfolios. She wrote strategies, a timeline, criteria for measuring success, and a list of the resources she would need to meet her goals, and gave them to her principal.

Before Noela came to observe the class, she asked Margaret questions like, "What can I do to help? How can I get a picture of what you have in mind? How do you want your students to move between activities?" Margaret wasn't entirely sure she could describe the change she sought. So Noela suggested that they videotape these "in between" moments so that Margaret could show the tape to her students and involve them in analyzing their own behavior. When they viewed the tape, Margaret's students volunteered thoughts about the distractions they were causing each other during the transition times. Margaret asked, "How do you think we can improve this?" and the children offered strategies for reducing the chatter. They asked for periodic designated "talk times" during the day. Meanwhile, Noela asked Margaret to notice what happened when she signaled that it was time for the students to get back to work. From the tape, Margaret saw for herself that they quickly returned to their learning tasks and that all of their conversation became "work talk." Since the tape showed that the students were engaging in their work, Margaret realized she could worry less about transitions and direct more of her efforts into guiding their learning.

Toward her second goal, Noela helped Margaret locate useful information about student-led conferences, and together they showed the students how they could meet with their parents and teachers to talk about their own work. Margaret allowed the children to role-play the process of discussing their portfolios with her and a "parent" played by another student. Noela videotaped these role-plays and asked Margaret questions about what she saw. By the end of the year, a number of Margaret's students had explained their own work to their parents at parent-teacher conferences.

During the year, Margaret and Noela went through four cycles of observations with pre- and postconferences. Sometimes Noela worked with the class while Margaret observed another class, held a conference with parents, or attended a training session. As always in such relationships, the partnership held rewards for them both, as they deepened their understanding of teaching by looking at problems of practice together.

III. Fix teacher recruitment and put qualified teachers in every classroom.

WE RECOMMEND: ***that states and districts pursue aggressive policies to put qualified teachers in every classroom by providing financial incentives to correct shortages, streamlining hiring procedures, and reducing barriers to teacher mobility.***

Can we afford to raise standards for teachers and staff classrooms, too? The question is key to America's future, and we answer it in the affirmative. The goal of access to qualified teachers for every student is well within reach if states and districts follow these five principles:

- **Increase the ability of low-wealth districts to pay for qualified teachers and insist that districts hire only qualified teachers.**

All schools must be adequately funded and staffed by first-rate teachers. To continue compromising this goal, especially in poor urban and rural schools, inevitably means the end of the American dream of equal opportunity. To ignore this imperative is to allow the nation to skate dangerously close to irreparably harming its public education system and its single best hope for preserving American democracy. Without adequate education, many children will be unable to contribute productively to society, an outcome that is incompatible with the continuation of healthy democratic life.

There are alternatives to perpetuating inequality. States can ensure that districts have both the capacity and the incentive to hire qualified teachers by equalizing district ability to pay for well-prepared teachers while they raise standards. When Connecticut pursued this strategy in 1986, distributing state funds in an equalizing fashion to enable districts to reach minimum beginning salaries, the state significantly raised standards for teacher education and licensing while eliminating shortages of teachers within three years. It also ensured that these new state funds would be spent on hiring more qualified teachers rather than on any number of other competing agendas that likely would have had less influence on student achievement.

In tandem, states should insist that districts hire only qualified teachers and that they assign teachers only in the fields for which they are approved and licensed. Incentives could include those used in Missouri and Delaware, which approve salary reimbursements only for licensed teachers, as well as sanctions such as disapproval of accreditation for districts that continually flout licensing laws.

- **Redesign and streamline district hiring.**

School districts routinely shoot themselves in the foot with cumbersome, inefficient hiring processes, late hiring, and tolerance for a revolving door of

Putting It All Together: The Quest for Teacher Quality in Connecticut

Like the bunny battery that never stops, Connecticut keeps honing its commitment to quality teaching. Teacher excellence was the heart of Connecticut's 1986 Education Enhancement Act, which committed more than $300 million to

- Raise standards for teacher education and licensing, including a system to support and assess beginning teachers;
- Make teachers' salaries competitive with other occupations requiring similar professional preparation; and
- Equalize district capacity to pay for salaries to reduce inequality among the state's school districts.

The state provided funds on an equalizing basis to school districts, which brought beginning teacher salaries up to a minimum level. This helped to equalize funding for schools while directing the new funds to the place they could have the greatest effect on learning: the hiring of more qualified teachers. Meanwhile the state required entering teachers to meet more rigorous standards for licensing, including a performance assessment coupled with mentoring during the first year of teaching and a master's degree within a few years of entry. As a result of these initiatives, the state experienced a dramatic boost in teacher quality and in the quality of preparation programs, while shortages were eliminated within three years of the bill's enactment.

Since then, the vision for a quality teaching force has remained, while specific components have evolved to reflect ever higher standards. Today, teachers in Connecticut are among the best prepared in the nation. As a result of the state's reforms, the proportion of teachers teaching with both a degree in their field and a license is one of the highest in the country. New teachers must complete a preparation program that includes a four- or five-year degree in their field and a rigorous set of education courses. Teachers can be hired only after passing tests of basic skills and subject matter knowledge. They then enter a two-year induction program that combines mentoring and performance-based assessment as the basis, along with a master's degree, for a continuing professional license.

During the first year of teaching, novices receive help from a school-based mentor or mentor team. Beginning teacher clinics are offered to help them prepare for the assessment of essential teaching competencies, which is conducted by state-trained assessors through observation or videotape. This process, which evaluates basic teaching skills, has been in operation for eight years.

The new component will evaluate first- and second-year teachers' abilities to teach challenging content for understanding and to adapt teaching to the needs of diverse learners. Based on the INTASC standards, teachers develop portfolios of their work, which include videotapes of specific lessons that reflect the teaching expected by new student standards, analysis of student work, and written descriptions of ways in which they adapt instruction to the needs of individual learners.

The 200 teachers who participated in last year's assessments found them extremely worthwhile. Tony Romano, a seventh-grade math teacher in Stamford, found the process of reflecting on his lessons each day during the six-week period he documented for his portfolio "work intensive" but "enlightening." "Although I was the reflective type anyway, it made me go a step further. I think it had more impact on my teaching than just one lesson in which you state what you're going to do. . . . The process makes you think about your teaching, and I think that's necessary to become an effective teacher."

Source: Connecticut State Department of Education/Division of Research, Evaluation, and Assessment, *Research Bulletin*, School Year 1990-91, no. 1 (Hartford, Conn.: Bureau of Research and Teacher Assessment, 1991).

beginning teachers, one that spins all the faster because seniority provisions in many local contracts practically guarantee that inexperienced teachers will be assigned to the most difficult teaching situations. Districts need to

- **Streamline and decentralize hiring procedures using technology.** School districts should create a central electronic hiring hall that lists relevant data for all qualified candidates and provides data on vacancies to candidates. They should then delegate selection and hiring decisions to schools. This will support responsible decentralization by ensuring that only qualified teachers are considered, while allowing schools to move ahead expeditiously in hiring candidates who fit their needs.

- **Focus on competitive early hiring of new teachers.** Districts should establish direct pathways from teacher preparation programs to the classroom through cooperative agreements with universities. They should also develop incentives to encourage veteran teachers interested in transferring or retiring to provide early notification of their intentions so that vacancies can be posted and filled much earlier.

- **Eliminate barriers to teacher mobility.**

Teacher shortages are made all the worse because, in an age of mobility, qualified teachers frequently find themselves unable to transfer their license to their new state, and teachers who could be persuaded to move to districts or states with shortages face the loss of seniority, salary credit, and vested pensions. Most of these roadblocks to mobility were long ago removed for college faculty members; they should be removed for public school teachers as well. Districts need to

- **Insist that their states participate in the INTASC assessment system,** which will allow reciprocal licensing agreements among states.

- **Work with states to create portable pension systems** (similar to the TIAA-CREF system established for college faculty early in this century) and/or to ensure that teachers can remain vested in their original districts.

- Develop policies for ensuring that **incoming veterans receive full salary credit** for their experience.

Recruiting the Best

In his 1983 study, *High School*, Ernest Boyer of the Carnegie Foundation for the Advancement of Teaching observed:

> *We cannot adequately prepare the coming generation if the least able students enter the profession. Teaching must become a top priority and gifted students must be recruited. . . . The process should begin in high school. We recommend that every high school establish a "cadet" teacher program . . . to identify gifted students and make opportunities for them to present information to classmates, tutor students needing special help, and meet with outstanding school and college teachers. For a young person to be told by a respected adult that he or she could be a great teacher may well have the profound impact on the career choice of that student.*

Taking its inspiration from this recommendation, the **South Carolina Teacher Cadet Program** was launched in 1986. Today it involves more than 130 high schools and 19 partner colleges serving nearly 2,100 academically able high school juniors and seniors. The cadets enroll in a yearlong course on teaching in which they study learning, child development, education history, and pedagogy. They engage in seminars, group projects, and discussions with educators. They observe classrooms, teach practice lessons, and tutor other students. In 1993, about one-fourth of the cadets who were high school seniors in 1988 were certified to teach in South Carolina, many of them in high-need rural areas and in critical shortage fields. They were much more diverse as a group and much more likely to report they plan to remain in teaching than other beginning teachers. Cadets say their experience helped them "better prepare themselves for college and for teaching." Nearly 60% of current cadets claim that as a result of the program they are more likely to become a teacher.

Another highly successful recruitment model is the **North Carolina Teaching Fellows Program,** which has thus far recruited 3,600 high-ability high school graduates to teaching, including significant numbers of young men and people of color. The students agree to teach for four years in the state's public schools in exchange for a $20,000 four-year college scholarship, which underwrites their preparation. Fourteen colleges and universities in the state participate in providing intensive year-round learning experiences that extend beyond regular teacher education courses. North Carolina principals report that the Fellows far exceed other new teachers in their performance, and the Fellows themselves give high marks to the preparation they received in instructional methods and teaching diverse students. Notes one Fellow, "The ample observations and early field experience at my university gave me the opportunity to watch many different teachers and many different styles. This exposure really helped prepare me for the 'real world' of a first-year teacher." Another observed that "the best thing the [program] did to prepare me was to make me aware that I would be teaching a diverse group of students. As a first-year teacher, I knew about at-risk students and different learning styles. I knew how to use cooperative learning in my subject area." The collegial emphasis of the program led another to be grateful that her experience "provided me a network of professionals that I can confide in and strategize with." Today, Teaching Fellows are working in some of the most challenging settings in the state.

The **Golden Apple Scholars of Illinois** was initiated by Chicago area teachers who had received Golden Apple Awards for their excellent teaching. They decided to recruit promising young people into the profession by selecting them during their junior year of high school then mentoring them through the rest of high school, their college years, and five years of actual teaching. For four consecutive summers the students attend intensive six-week residential institutes, teaching in Chicago classrooms for three hours each day and attending classes designed for them dealing with leading-edge education ideas. The 60 Golden Apple Scholars each year are now supported with state and city funds and have their Stafford loans repaid if they stay in teaching. Half are from Chicago, and 68% are minority and/or low-income. The program has a 90% retention rate, is now statewide, and involves 22 private and public campuses. The first cohorts of new teachers are now in schools, many of them teaching and succeeding in challenging assignments in Chicago.

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- **Aggressively recruit high-need teachers and provide incentives for teaching in shortage areas.**

If student learning is our major concern, we can no longer permit bureaucratic convenience to push aside standards of quality. Teacher shortages are much more rare in states and districts with proactive teacher recruitment policies than in those that have treated teaching in a laissez-faire manner. To assure an adequate supply of top-flight teachers,

- States and the federal government should support **scholarships linked to several years of teaching service for able candidates who prepare to teach,** targeting a major share to those who make a commitment to shortage fields and hard-to-staff locations.

- States should work with schools and colleges to **expand the pools of teachers of color and from diverse linguistic backgrounds through targeted recruitment programs** and financial supports for preparation. These efforts should include supports for programs that encourage middle and high school students to consider a teaching career.

- Districts should **provide additional pay for teachers with licenses in two or more subject areas and consider stipends and other incentives for teachers with licenses in shortage areas** determined by an objective labor market analysis each year.

- **Develop high-quality pathways to teaching for a wide range of recruits.**

The Commission is deeply concerned about back-door and off-the-street hiring that puts unqualified persons in classrooms. At the same time, we applaud the growing number of teacher education institutions that have developed alternative routes to teaching. It is critically important that the pool of persons interested in teaching be expanded and that different approaches to preparation be developed. Every college should create and support programs that build high-quality pathways into teaching, particularly in high-need areas, for recent graduates, midcareer entrants, military and government retirees, and paraprofessionals already in the classroom.

While schools seek qualified teachers, all over the United States young college graduates complain that despite their expensive education they cannot find work. At the same time, displaced midcareer professionals and military and government retirees often spend years seeking employment that uses their expertise. Access to teaching for these groups was historically limited by the fact that teacher education existed only in undergraduate programs in most states, and state approval processes restricted licensing only to those programs. Those who had already graduated from college had few options but to start college over again. Those who began in community colleges had few pathways to continue

Midcareer Recruitment Efforts: Alternatives with Promise

I earned a degree from Purdue in Mechanical Engineering, then went to work as a hydrologist. I really enjoyed my work a lot. . . . But I always knew I wanted to teach.

— A MIDCAREER RECRUIT TO TEACHING AT INDIANA UNIVERSITY

I've had all the status I need in my naval career. I don't have big demands for money; I don't have a need for status. . . . By virtue of my experience, maybe I can do a little bit better job [for the education system].

— A GRADUATE OF GEORGE WASHINGTON UNIVERSITY'S MIDCAREER PROGRAM

While public schools are often desperate for trained math and science teachers, many industries and the military are downsizing and letting go of employees with years of experience in these fields. Making the match between these skills and needs, the **California Mathematics and Science Teacher Corps Program at California State University, Dominguez Hills,** was created with help from businesses that provided stipends for retiring employees to prepare to teach. IBM, TRW, McDonnell-Douglas, and Hughes were among the first companies to participate. Among the initial recruits, most already had master's degrees and had worked as engineers. During their year in the program, candidates observe, tutor, and student-teach in schools while taking courses in teaching methods, motivation, learning, classroom management, and multicultural perspectives. This training, they affirm, is essential to their later success.

The Crystal City Secondary Teacher Education Program at George Washington University has prepared retiring military personnel and other technically trained professionals for teaching since 1985. Recruits completing this nine-month program come from all of the armed forces. Between 1986 and 1993, the 200 graduates were 89% male with an average age of 44. Most entered with professional degrees, having been military officers or managers. These sophisticated consumers of education rate their training program highly, especially after they enter teaching and realize how much they use the coursework and student-teaching they experienced. Their school systems rate them highly as well.

The Teacher As Decision Maker Program at Indiana University focuses on midcareer changers of all ages who come from careers including law, business, medicine, scientific research, nursing, engineering, and journalism. The 14-month program is tailored to suit each person's previous experience and professional goals. Students with recent degrees may need less academic work in their disciplines than those who received their degrees years ago. Those with a strong academic major and minor may work toward a license in two teaching fields. Fellows engage in peer mentoring, analyze their teaching on videotape each week, observe exemplary teachers, and participate in an ongoing seminar during their 15 weeks of student teaching, which gradually increases to a full teaching load working closely with an expert mentor.

Colorado State University's Project Promise recruits prospective teachers from fields as diverse as law, geology, chemistry, stock trading, and medicine. The ten-month program emphasizes problem solving, cultural awareness, and student needs as well as subject matter and pedagogical preparation. Candidates cycle through four or five intensively supervised teaching practicums in very different settings for up to nine weeks each. They also engage in regular peer coaching. Evaluation is based on demonstrated performance, not credit hours or seat time. Faculty mentor graduates in their first and second year of teaching, bridging the infamous gap between preparation and induction. Outcome data show that recruits feel exceptionally well prepared to teach, and they enter and stay in teaching at levels far exceeding the average for traditional teacher education students. More than 90% enter and 80% stay over a five-year period. It is no wonder that districts from across the country try to recruit Project Promise teachers.

The nation's nearly 500,000 paraeducators represent another significant source of prospective teachers who are representative of and rooted in the communities in which they serve. **The Navajo Nation Ford Teacher Education Program** is a joint effort of the Navajo Nation and the Ford Foundation to recruit and prepare Navajo teachers through a consortium of six colleges and universities. Participants receive scholarships and stipends amounting to nearly $12,000 to complete their college degrees and education training with academic advisement and support. Most of the more than 200 participants in the program are Navajo-speaking teacher aides, and the program has produced 38 new Navajo teachers so far.

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their education in a teaching program. However, more than 200 accredited universities have created successful models that provide high-quality alternative routes into teaching at the postbaccalaureate level as well as articulated pathways for paraprofessionals moving into teacher education from community colleges. These deserve emulation and support.

These kinds of programs have been successful because of the investments in scholarships, loans, and other program supports made by some states and foundations. Evidence suggests that such investments ultimately pay handsome dividends for the schools that hire these recruits. Yet these programs flourish in some communities, while other communities with equally great needs have few avenues for interested candidates to become well prepared for teaching. A well-planned set of incentives that provide financial aid for candidates along with supports for more high-quality programs could make an enormous difference in our capacity to teach all students in all subjects in all communities well.

IV. Encourage and reward knowledge and skills.

WE RECOMMEND: ***that districts, states, unions, and professional associations cooperate to make teaching a true profession with a career continuum that places teaching at the top and rewards teachers for their knowledge and skills.***

For generations, teachers have wanted to be considered professionals. Now the confluence of two developments puts that goal within reach. The first is the evolution of a coherent set of high-quality teaching standards; the second, the courageous work of a number of states and local school districts to embody these standards in new systems of teacher evaluation, compensation, and professional development that provide the scaffolding for a true profession—one that is grounded in an unyielding commitment to students, a body of shared knowledge, and willingness to set, enforce, and transmit standards of practice. Creating a profession requires three kinds of actions:

- **Develop a career continuum for teaching linked to assessments and compensation systems that reward knowledge and skill.**

Existing career tracks and compensation systems in teaching create a career pathway that places classroom teaching at the bottom, provides teachers with little influence in making key education decisions, and requires teachers to leave the classroom if they want greater responsibility or substantially higher pay. The message is clear: Those who work with children have the lowest status; those who do not, the highest.

We need a different career continuum, one that places teaching at the top and creates a career progression that supports teachers as they become increas-

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ingly expert. Like the path from assistant professor to associate and full professor on campuses—or junior associate to partner in law firms—the new pathway should recognize skill and accomplishment, anticipate that professionals will continue to do what they are trained to do while taking on other roles that allow them to share their knowledge, and promote continued skills development related to clear standards.

Without abandoning the important objectives of the current salary schedule—equitable treatment, incentives for further education, and objective means for determining pay—we believe compensation systems should provide salary incentives for demonstrated knowledge, skill, and expertise that move the mission of the school forward and reward excellent teachers for continuing to teach. High-performance businesses have increasingly found that knowledge- and skill-based pay can support efforts to reorganize work in ways that involve employees in greater decision making and continual learning.[112] Rewarding teachers for deep knowledge of subjects, additional knowledge in meeting special kinds of student and school needs, and high levels of performance measured against professional teaching standards should encourage teachers to continue to learn needed skills and enhance the expertise available within schools.

We start with the presumption that teachers will be hired only after completing a high-quality preparation program and passing tests of subject matter knowledge and teaching knowledge to receive an initial license. We then recommend that compensation schedules build in additional pay for at least three types of demonstrated knowledge and skill:

1. **Successful completion of performance assessments for a full continuing license** as demonstrated by passing INTASC examinations of teaching skill in the first years of teaching.

2. **Licensing in more than one subject area.**

3. **Advanced certification** as demonstrated by successful completion of assessments offered by the National Board for Professional Teaching Standards.

The first and last areas define a career pathway that some districts have already begun to develop—one that ties evaluations to pay increments at several junctures as teachers move from their *initial license*, through a period as a *resident teacher* under the supervision of a mentor, to designation as *professional teacher* after successfully passing an assessment of teaching skills. *Tenure* is a major step tied to a serious decision made after rigorous evaluation of performance in the first several years of teaching, incorporating administrator and peer review by expert colleagues. *Advanced certification* from the National Board for Professional Teaching Standards may qualify teachers for another salary step and/or for qualification to serve as a *lead teacher*—attained by further evaluations of skills and competence and authorizing stipends for a wide range of professional responsibilities.

Increased pay for teachers holding additional licenses would acknowledge the value of being able to teach expertly in two or more subject areas and to provide needed services, such as special education or counseling expertise, within a teaching team or school. Teachers in many European countries gain multiple areas of expertise as part of their basic teacher preparation. In the United States, this kind of strategic pay would address two current major problems: (1) the high levels of out-of-field teaching that occur in most schools; and (2) the underpreparation of most teachers to work effectively with students with special needs. Rewarding teachers for their willingness to gain knowledge to meet these needs is likely to improve learning for many students substantially while deepening the expertise of the teaching force overall.

The public desire to link teacher compensation to evidence that teachers are effective in engendering student learning is one that has been problematic in the past. This is partly because crude measures like average student test scores do not take into account the different backgrounds and prior performances of students, the fact that students are not randomly distributed across schools and classrooms, the shortcomings in the kinds of learning measured by current standardized tests, and the difficulty in sorting out which influences among many—the home, the community, the student him- or herself, and multiple teachers—are at play.[113] Attempts to link student test scores to rewards for teachers and schools have led to counterproductive incentives for keeping out or pushing out low-achieving students, retaining them in a grade so their scores look higher, or assigning them to special education where their scores don't count, rather than teaching them more effectively.[114]

The Commission's proposals connect teacher compensation to student learning and effective practice in a more careful way than has previously been possible. The new assessments of the National Board and INTASC are based on evidence of effective practice, and they evaluate how specific teaching practices contribute to the learning of particular students over time. The evidence in these assessments allows experts to analyze how teachers support student learning through their curriculum decisions, instruction, and assessment; and to track how selected students actually progress in their learning. Only teachers who exhibit high-quality teaching and whose students show evidence of learning can pass these assessments.[115]

One other feature of a new compensation system is key. The central importance of teaching to the mission of schools should be acknowledged by a system in which the highest paid professional in a school system is an experienced National Board-Certified teacher, who should be able to earn as much by teaching as by becoming an administrator. In addition, as in other professions, the distinctions between teaching and administrative roles should be much less visible than they are today, allowing many ways for individuals to use their talents and expertise for the enhanced performance of the team without abandoning the core work of the profession.

In a new career continuum, teachers (and administrators) should have options for multiple professional roles while remaining in teaching.[116] School districts should create more fluid and varied roles for educators throughout their

New Teaching Careers in Cincinnati and Rochester

The Career-in-Teaching programs in Rochester, New York, and Cincinnati, Ohio, aim to provide incentives to attract and retain quality teachers in the profession, improve teachers' professional growth opportunities and give teachers broader roles and responsibilities that will improve student achievement and provide better schools. The career steps—intern, resident, career teacher, and lead teacher—provide supports for learning, evaluation based on professional standards, and salary incentives. Teachers advance in their career as they gain and demonstrate growing expertise.

In both cities, new teachers begin as interns. In Cincinnati, a growing number of beginners have already practiced under supervision in professional development schools as part of the University of Cincinnati's five-year teacher education program. New teachers receive close mentoring from an expert consulting teacher, who also evaluates them for continuation and advancement to the residency level. A less than satisfactory rating leads either to a second year of assistance or to termination. A satisfactory evaluation is needed to move up on the salary schedule. Since the program began, overall attrition of beginning teachers has decreased and beginners become much more competent sooner. In Rochester, for example, retention of beginning interns is 90%, as compared with only 60% before the program was put in place. In both cities, a greater number of probationary teachers than before are asked to leave if they have not met the standards—roughly 8% in Rochester. The foundations for professional accountability are laid early in the career.

Over the next three to four years, resident teachers develop their teaching skills and become active in professional decision making. In Cincinnati, a formal evaluation by the principal is required at the third and fifth years when the teacher applies for career status and tenure. Salary steps for experience at these junctures—and at years 17 and 22—are contingent on evaluation. Advancement to career teacher status carries an additional $1,000 salary increment. Altogether, there are at least six points at which salary advancement is linked to performance. In Rochester, annual salary advancement is linked to satisfactory performance. Teachers who do not meet professional standards do not receive salary increases and are candidates for an intervention process.

Those who wish to can apply for lead teacher status after seven or more years. Lead teachers are not only excellent teachers, they also know how to mentor adults and facilitate school change. They serve as consulting teachers for beginners and veteran teachers who are having difficulty, curriculum developers, clinical faculty in the districts' teacher education partnerships with local schools of education, and leaders for school-based initiatives while continuing their own teaching.

To become a lead teacher in Rochester, candidates must provide confidential recommendations from five colleagues, including teachers and principals. Specific positions as mentors, curriculum designers, and project facilitators come with stipends ranging from 5 to 15% of total salaries—a range of about $3,000 to $9,000. About 32 of Rochester's teachers are currently lead teachers.

In Cincinnati, salary increments for lead teachers range from $4,500 to $5,000. About 300 of Cincinnati's 3,000 teachers have passed the rigorous evaluation process to attain lead teacher status—four to six classroom observations by expert teachers, interviews of colleagues about the applicant, and an extensive application that reveals the candidate's philosophy and experience. Obtaining National Board Certification is another means of becoming credentialed as a lead teacher. Both cities already have more than their share of Board-Certified teachers due to the strong support for participation provided by the teacher associations and local boards.

The chance to contribute gives lead teachers a new lease on their own professional lives while their work improves teaching quality throughout the district. The result is a career in teaching that recruits and retains talented teachers while increasing professionwide knowledge and skill. As Cincinnati lead teacher Helen Buswinka notes:

> *Participating [as a lead teacher in a professional development school] has given me an occasion to think grandly about what it means to "educate a teacher." In the process, my own vision of teaching has been nourished. As a member of both worlds, I am able to participate in the shaping of the next generation of teachers, to be part of the evolution of my profession.*

careers so that knowledge and talent can be more widely shared. They should structure time and responsibility so that teachers can be involved in peer coaching and mentoring, curriculum and assessment development, teacher education, and school leadership. In schools of the future, the roles of teacher, consultant, supervisor, principal, curriculum developer, researcher, mentor, and professor should not be mutually exclusive. Instead they should be frequently hyphenated to allow many kinds of learning and leadership that advance better teaching and schooling.

- **Remove incompetent teachers.**

A career continuum based on standards of professional practice must also address the need to make judgments about the competence of teachers and to counsel individuals out of the profession when they do not, after receiving assistance, meet professional standards. In some school districts, new career pathways incorporate peer review and assistance from lead teachers who provide intensive support for beginning teachers and for veterans who are having difficulty. Those who do not improve are counseled out of teaching. These systems—collaborations between unions and school boards—have proven more effective than traditional evaluation systems at both improving and dismissing teachers, demonstrating that teachers can be professionally accountable.

Systems that incorporate peer assistance and review have several advantages over traditional systems of teacher evaluation. Typically, school principals are asked to evaluate and support all the teachers in their building, despite the other pressing demands of the principalship, the large numbers of teachers in many schools, and the vast range of subject areas and grade levels. With inadequate time and expertise to assess teaching in-depth, judgments of teacher competence must typically be made in a single quick visit to the classroom with a simple checklist in hand. This approach provides little opportunity for specific feedback that is helpful in the context of a particular classroom and teaching area. Most teachers find it unhelpful to them in improving their practice.[117] Where problems are found, few principals have the time and expertise to provide the intensive assistance needed to help teachers improve or to complete the extensive documentation needed to try to have them removed.

Peer assistance and review programs apply greater time and expertise to the processes of support and evaluation as expert consulting teachers who have released time for this purpose help their colleagues. Where teaching problems are found, they can be worked on in depth over time. Where improvement does not occur, teacher associations do not block dismissal when they have been involved in designing and implementing an approach that provides due process protections throughout.

In a comprehensive system of professional accountability, safeguards against incompetence should occur at several junctures:

- When prospective teachers pass demanding assessments before they receive an initial provisional license;

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Promoting Improvement and Removing Incompetent Teachers through Peer Assistance and Review

I think [there was] a generation of people who didn't have anyone there to help them when they walked in the door. . . . They went into their room and shut the door. And every year some kids would come through, and however they [taught], that was what was done. . . . The bottom line is children come first. We are here for the children. We're professional educators and here to teach children. That is a driving factor of the Peer Assistance and Evaluation Program.

— Carolyn Nellon, Peer Review Panel, *director of human resources,* Cincinnati Public Schools

Although many claim it is impossible to truly evaluate teachers or get rid of those who are incompetent, a growing number of districts are transforming old, nonfunctional systems of teacher evaluation into peer review systems that improve teaching performance and counsel out those who should not be in the profession. Peer review and assistance programs initiated by AFT and NEA locals in Toledo, Cincinnati, and Columbus, Ohio; Rochester, New York; and Seattle, Washington, have been successful in helping beginners learn to teach and in helping veterans who are having difficulty to improve their teaching or leave the classroom without union grievances or delays.

Each program was established through collective bargaining and is governed by a panel of 7 to 10 teachers and administrators. The governing panel selects consulting teachers through a rigorous evaluation process that examines teaching skills and mentoring abilities. The panel also approves assignments of tenured teachers to intervention status (through self-referral or referral made by principals) and oversees appraisals of intern and intervention teachers.

In each case, standards for gaining tenure and remaining in teaching have been significantly raised by the Peer Assistance Program. Part of their success is the development of more useful measures to replace what Rochester's Tom Gillett calls "drive-by observation-based checklists." In Rochester, all teachers must participate in a review every third year, choosing colleagues or administrators to examine data on their performance, including information about student learning as well as practice.

Another success factor is the intensive assistance provided by consulting teachers who are freed up to focus on this job. This ensures that adequate help and documentation will occur over the course of the year. A third reason is the expertise of the consulting teacher, who is selected for teaching excellence and who generally is matched by subject area and grade level with the teacher being helped. This increases the value of the advice offered and the credibility of the judgment rendered.

In each city, more teachers have been given help and have made major improvements in their teaching *and* more teachers have been dismissed than ever had occurred under the old systems of administrative review. In Toledo and Cincinnati, roughly one-third of the teachers referred to intervention each year have left teaching by the end of the year through resignation, retirement, or dismissal. In Columbus, about 144 teachers (approximately 2% of the teaching force) were assigned to intervention over an eight-year period. Of those, about 20% retired or resigned. The others have improved substantially: During the first five years in Cincinnati, 61% of teacher dismissals for performance reasons resulted from peer review, as compared with 39% from evaluation by administrators. Five percent of beginning teachers under peer review were dismissed, as compared with 1.6% of those evaluated by principals. Of 60 Rochester teachers assigned to the Intervention Program since 1988, about 10% determined through their work with lead teacher mentors that they should leave the profession. Rochester teachers may voluntarily request the assistance of a lead teacher mentor through the Professional Support Program, which has served about 100 teachers each year since 1991.

When teachers take on the task of professional accountability, it not only improves instruction but it profoundly changes the roles of teachers' unions.

"We can't legitimately protect teachers who are not performing," says Denise Hewitt, director of Cincinnati's Peer Review Panel. At the same time, the improvements in teaching can sometimes be striking. According to Cincinnati consulting teacher Jim Byerly: "We had a teacher who was in intervention ten years ago, who . . . had considerable skills and experience but she had gotten lazy. . . . She needed to start planning the lessons and stick to them and do the hands-on stuff that was needed. . . . Her final appraisal was strong, better than average. I think she felt empowered by the outcome. She went on to be a lead teacher."

- When peer evaluation and review are used during the first years of teaching to support learning and counsel inadequate teachers out of the profession prior to tenure;
- When a continuing professional license is granted only after the passage of performance assessments;
- When districts refuse to hire unlicensed teachers or to allow teaching out of license; and
- When provisions are negotiated in staff agreements for ongoing professional peer review and intervention leading to dismissal where necessary.

The problem of teacher incompetence represents a tiny fraction of the overall teaching force, but in each case where it is left unaddressed, it undermines public confidence and harms hundreds of students. A growing number of districts have demonstrated, with the support of teacher associations, that it *is* possible to remove incompetent teachers and that with systematic supports and interventions in place, the problem grows smaller with each passing year. With these kinds of safeguards, parents can be assured that their children will be taught only by qualified, competent teachers who are continually refining and enhancing their skills.

- **Set goals and enact incentives for National Board Certification in every state and district. Aim to certify 105,000 teachers in this decade, one for every school in the United States.**

The great promise of the National Board is that it clearly delineates standards for accomplished teaching and creates the prospect for a career continuum from entry to expert practice. Having just begun its work, however, the National Board has certified only about 400 teachers thus far. Professional certification in teaching must be helped to grow as it has in medicine, where Board Certification began on a tiny scale in 1916 but has since created the most powerful lever since the founding of the teaching hospital for advancing knowledge in medical education and practice.

In the next ten years, National Board standards must influence every school and school of education and become a part of the professional development plan for virtually all teachers. If by the year 2006 we can point to a Board-Certified teacher in every school, we will have created a situation in which every teacher in the United States has access to a teacher leader who embodies and can promote accomplished practice.

Such a phenomenal increase in the numbers of Board-Certified teachers will not be wished into being. We will achieve it only if the National Board works with individual states and districts to lay out discrete, quantifiable goals, year by year, ascertaining how many teachers—by state and district—can be persuaded to complete the challenging assessments involved in securing Board Certification, teaching's highest accolade. Part of meeting this challenge is making professional standards and assessments a part of every step along the career pathway for teachers.

V. Create schools that are genuine learning organizations.

WE RECOMMEND: ***that schools be restructured to become genuine learning organizations for both students and teachers—organizations that respect learning, honor teaching, and teach for understanding.***

Many analysts have noted that there is very little relationship between the organization of the typical American school and the demands of serious teaching and learning. Nothing more clearly reveals this problem than how we allocate schools' major resources of time, money, and people. Our schools are cumbersome bureaucratic inheritances from the 19th century, not the kinds of learning organizations required for the 21st. Far too many people sit in offices at the sidelines of the core work, managing routines rather than promoting innovation aimed at improved quality. A bureaucratic school spends substantial resources on controlling its staff; a thoughtful school invests in knowledge and supports that liberate staff members to do their jobs well. A traditional school administers rules and procedures; a learning organization develops shared goals and talents. Our inherited school anticipates the worst from students and teachers; the school of the future expects and enables the best. As David Kearns, former chief executive officer of Xerox Corporation, explains:

> Lockstep, myopic management is still the norm in American education today, just as it was in American business. . . . Our entire way of thinking needs to be replaced. Today's high-tech firm is lean: It has stripped away middle management. It is decentralized, relying on the know-how and professionalism of workers close to the problem. It is innovative in the deployment of personnel, no longer relying on limiting job classifications. It spends heavily on employee education and training. It invests heavily in research.[118]

Just as businesses have had to restructure to obtain significantly better results, changing school performance will require reallocating funds, restructuring staffing patterns, and redesigning teaching and the use of time. These steps are needed not only to be able to afford more time for teacher learning and collaboration, but also to be able to create settings within which teachers can use their expertise more effectively and work much more productively with students toward more challenging learning goals.

Our schools need to be redesigned so that they honor teaching, respect learning, and teach for understanding. To be able to direct their energies around a common purpose, schools need to adopt shared standards for student learning that become the basis for common efforts of teachers, parents, and the community. Then, schools must structure their work so that teachers can work more intensively with students and with each other and can have greater influence over the design of the learning experiences their students encounter. Schools must be freed of the tyrannies of time and tradition to enable more powerful student and teacher learning. To that end, we recommend that they

- **Restructure time and staffing** so that teachers have regular time to work with one another and shared responsibility for groups of students over time.
- **Rethink schedules** so that students and teachers have more extended time together over the course of the day, week, and years.
- **Reduce barriers** to the involvement of parents so that families and schools can work together toward shared goals.

Learning in America is a prisoner of time, according to the 1994 report of the National Commission on Education Time and Learning.[119] Short, fragmented time periods and rigid expectations for the use of time reduce the amount of learning that can occur for many students. Lack of coordinated time and shared responsibility among teachers reduces accountability for the overall learning experience. We need to create structures that help students undertake more in-depth learning clearly aimed at the new standards they need to reach and that help teachers to be more successful at supporting student learning. Keeping teachers, or teams of teachers, together with the same groups of students over several years is one possibility; longer class periods for students and teachers together within the school day are another. These and other possibilities need to be seriously considered as we work to release schools, students, and teachers from the constraints that impede teaching and learning.

We also need to create time during the school day and year for teacher learning, breaking down the isolation of egg-crate classroom structures and the inefficiencies of fragmented teaching schedules. Restructured schools are finding time by devoting more of their staff energy directly to classroom teaching, rather than to administration, pullout programs, or management of special services. By rethinking time and staffing assignments, they can reduce student loads while giving teachers regular periods each week to work with and learn from each other. In addition, a longer school year for teachers and administrators opens the possibilities for additional time devoted entirely to professional development. Our goal should be at least ten hours per week for collegial work and learning within the school and at least ten days per year of additional professional development time, supported by reallocations of staff and the redesign of responsibilities.

Within this time and the purviews of restructured roles, teachers need opportunities to work in partnership with parents and community members to coordinate their work on behalf of more effective learning and teaching. In schools like Zavala Elementary School in Austin, Texas, major changes in practice and better outcomes for children have proved possible as parents have been involved in school renewal and problem solving, and as the school has

Community Engagement and Teacher Development at Zavala Elementary School

Five years ago, Zavala Elementary School's 486 students—most from two housing projects near the school—were failing badly. Only 34% of its third-graders passed the reading, writing, and math sections of the Texas Assessment of Academic Skills (TAAS), placing it 63rd among Austin's 64 elementary schools. Student attendance was poor, annual staff turnover was 50 percent, and PTA meetings were sparsely attended.

Then Alejandro Mindiz-Melton became Zavala's principal and began cultivating relationships with parents and community leaders, including Austin Interfaith, a coalition of religious organizations. At community meetings, parents asked teachers to work more closely with them to raise their children's academic achievement. Mindiz-Melton and the teachers organized Saturday Community Walks to students' homes, not to address discipline problems as in the past, but to listen to parents' ideas and suggestions about how to improve the school.

These walks changed the tenor of family-school relationships and created a strong partnership for change. Parents began to volunteer throughout the school, where many of them also attend English classes. Teachers worked together to reorganize their teaching, studying recent research on how children learn, coordinating instruction across grade levels, introducing new language arts and mathematics curriculums, and grouping children in new ways so that they would learn from each other.

Today, as a Texas Alliance school, Zavala's scores on the TAAS are well above the district average in reading, writing, and math, and teacher attrition has all but stopped. Student attendance soared to 97.9% in 1994-95—the highest in the city. As Zavala teachers became active partners with parents and with each other, they learned in many new ways. Claudia Santamaria, a bilingual fourth-grade teacher, tells the story this way:

When I came to Zavala six years ago, we were all just doing our own thing, isolating ourselves in our own rooms. But we failed to see that our children were really failing the TAAS test, which is a major state standard for our children. We thought, "Well, we're in a poor community, our children are often sick, and attendance is bad." We kept coming up with reasons why the kids just weren't learning.

What changed for me professionally wasn't so much through workshops, because workshops had always been there, and we had always been going to them. When we became an Alliance school, our whole frame of thinking changed—we began to think of the school as a family. What Austin Interfaith did was to bring us together in conversation with each other. We were able to see that we had a lot of strengths that we had failed to recognize, and that we had a lot to learn from one another. Before, I had goals for my children in fourth grade, and the first-grade teacher had hers and the kindergarten teacher had hers, but we really hadn't pulled our resources together to see where we wanted the school to go—we were all pulling in different directions.

We were working really hard, but now we work smarter because we've pulled our resources together. We sat together and asked ourselves, "What's working, what's not?" In the past, I couldn't have told you what my neighbor was doing—I didn't know. Now we have a schoolwide focus. When we work on TAAS writing, all of us are writing on the same prompts, and the children know—they can go home and talk to their little brothers and sisters. Now, as teachers, we know what we're doing, and we know where we're headed. We're holding ourselves accountable.

Sources: Richard J. Murnane and Frank M. Levy, *Teaching the New Basic Skills: Principles for Educating Children to Thrive in a Changing Economy* (New York: Free Press, 1996); Dennis Shirley, *Laboratories of Democracy: Community Organizing for School Reform* (Austin, Texas: University of Texas Press, forthcoming); U.S. Department of Education, "Zavala School in Texas Turned Failure into Success," *Goals 2000: Community Update*, no. 20 (January 1995).

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strengthened professional development tied to standards for student learning. Other partnerships, like Illinois's Project Success, have placed schools at the hub of family and community services, creating supports for family engagement and child welfare that spill over into improved learning.

These kinds of approaches can be viable on a broader scale only if systemwide efforts are made to free up resources from the many crevices of bureaucracies where they are now lodged so that they can be applied to the frontline needs of children and teachers. The Commission recommends that states and school districts carefully examine the ways they have organized services and allocated resources to create more effective models of service delivery and more efficient uses of limited funds. We urge that systems take three important steps:

Project Success

It was standing room only the night a Decatur, Illinois, elementary school started its class on computers for parents. "We had to scramble to find places for the more than 40 parents who showed up," says Linda Rowden, coordinator of Project Success in Decatur.

This was a welcome problem. Like many schools enrolling many poor children, those in Decatur's Project Success struggled to find ways of drawing alienated parents into the schools. "We had to break down bad feelings," Rowden recalls, created by what seemed like nothing but negative contacts with schools.

Decatur is one of the original six pilot communities of Illinois's Project Success, launched in 1991 to build service networks around families so that all children are ready for school and have continued support. Now operating in 130 communities and almost 400 elementary schools statewide, the program offers many nonthreatening ways for parents to be drawn into schools.

In Decatur, each school set up a parents' lounge and plans social get-togethers at least monthly. There are parenting classes, literacy and GED classes, and courses like the computer class that parents and children attend together. The project makes sure children have the immunizations and supplies they need to enter school. This simple action starts the school experience on a good foot. "Parents think of this as a nice thing to do," says Rowden of the school supplies initiative, "and that opens up rapport between teachers and parents.

Weekly sessions for parents of very young children "build on the skills they already have," says Rowden, "and create a support group for the parents. . . . They share a lot with each other." Collaboration continues over the summer months with the school and Parks Department working together on activities for children and teachers opening up school libraries several times a week to keep in touch with children.

This unique state-community partnership does not create new programs. Rather, it enables communities to use services more effectively. About a dozen state agencies are represented on the Project Success State Steering Committee, coordinated out of the governor's office. Local governing boards made up of schools, community agencies, parents, and businesses identify problems and plan initiatives to solve them. At both the state and local levels agencies share staff and resources, grant waivers, and cross program lines to serve critical needs of children and families.

With schools as the hub, teachers can access community services to improve child and family well-being in areas ranging from health, safety, and housing to education and after-school care. Well-supported families help children come to school happy, healthy, and ready to learn, secure in the knowledge that their families and school are working together to help them grow.

- **Flatten hierarchies and reallocate resources to send more dollars to the front lines of schools: Invest more in teachers and technology and less in nonteaching personnel.**

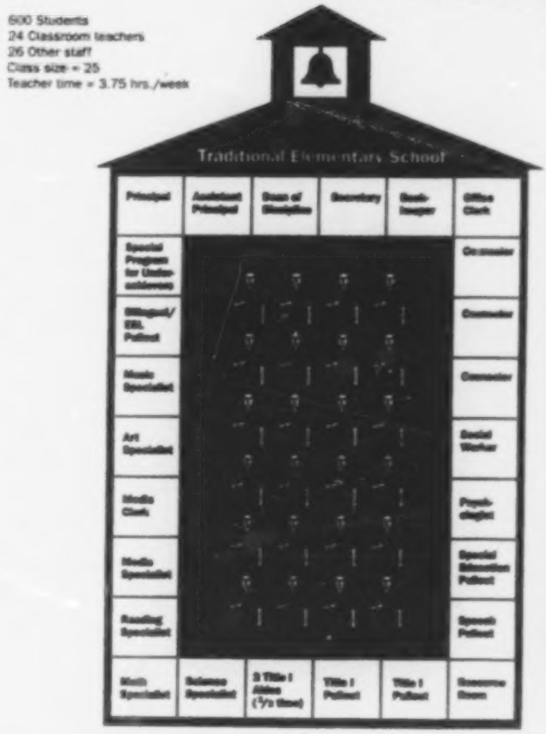
Across the United States, the ratio of school staff to enrolled students is 1:9, according to data from the National Center for Education Statistics.[128] However, actual class sizes average about 24, reaching 35 or more in cities like New York and Los Angeles. Teaching loads for high school teachers generally exceed 100 students per day and reach nearly 200 per day in some cities. This is because more than half of all school system staff are not classroom teachers, including large numbers of specialists, supervisors, and teachers who work in pullout settings as well as nonteaching personnel. Although administrators are actually the smallest numbers of such staff, U.S. schools have more layers of hierarchy than those in most other countries, once state agencies, regional units, school districts, and schools are added together. Within these agencies, administrative support staff who manage reporting requirements have increased along with the proliferation of regulations over the last two decades. Within schools themselves, the number of nonteaching staff such as instructional and mental health specialists, aides, and security personnel has climbed, as has the number of teachers who work in special pullout programs for special education, compensatory education, and English as a Second Language instruction.

These staffing patterns are a vestige of the Taylor model of industrial management from the 1920s, in which jobs are broken up and highly specialized, and some staff are supposed to think, plan, and coordinate work while others are supposed to do it. Yet many schools have proved that it is possible to restructure adult use of time so that more teachers and administrators actually work with students on a daily basis in the classroom, thus reducing class sizes while creating more time for teacher collaboration. They do this by creating teams of teachers who share students, engaging almost all adults in these teaching teams where they can share expertise directly with one another, and reducing pullouts and nonteaching jobs. Within these work groups, planning for students can be more effectively managed and blocks of time can be more productively used. The school's resources are pushed into the core classroom structure where they can be used in the context of extended relationships with students rather than sitting around the periphery of the school to be applied in brief encounters with students or in coordinative rather than teaching roles.

In the examples here we describe how both elementary and secondary schools have redesigned staffing to greatly enhance teaching and teacher collaboration and produce greater success for students. On the next page we show how a typical elementary school of 600 students can reorganize its staff so that average class sizes can be reduced from 25 students to 16 or 17 students, while teachers' planning time is increased from less than 4 hours a week to at least 10 hours. This is accomplished by reducing the number of nonteaching staff and by infusing pullout teachers into teaching teams. While keeping key administrative supports in place—including a principal, secretary, bookkeeper, and social worker—this increases the total number of full-time equivalent classroom teachers from 24 to 43 (from less than 50% of all staff to more than 80%).

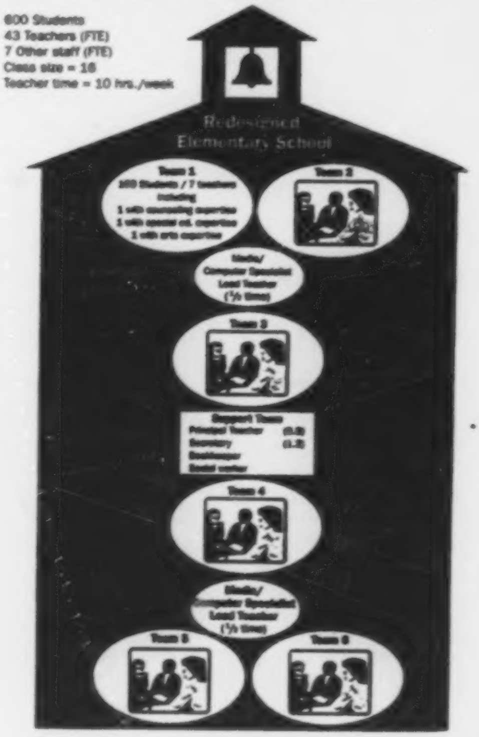
In the redesigned school, each team of seven teachers serves 100 students and includes teachers with expertise in the arts, counseling, and the teaching of special-needs students. The teams can draw upon this expertise in curriculum planning, and they can organize their time and efforts to take advantage of different talents in various ways for different activities. The three primary grades teams share a media/computer specialist and a lead teacher, who has half of her time released from teaching to facilitate planning and cover classes while other teachers visit and observe one another. The same supports are available to the three upper-grades teams. The result is more personalized education for students, more collegial learning opportunities for teachers, and a system more capable of taking responsibility for student learning.

We need to rethink school staffing so that all personnel are involved in thinking as well as doing. And we need to revamp spending to invest in the front lines of schools, not the back offices. If most staff in U.S. schools were



600 Students
24 Classroom teachers
26 Other staff
Class size = 25
Teacher time = 3.75 hrs./week

Traditional Elementary School
Principal
Assistant Principal
Dean of Discipline
Secretary
Bookkeeper
Office Clerk
Special Program for Underachievers
Counselor
Bilingual/ ESL Pullout
Counselor
Music Specialist
Counselor
Art Specialist
Social Worker
Media Clerk
Psychologist
Media Specialist
Special Education Pullout
Reading Specialist
Speech Pullout
Math Specialist
Science Specialist
3 Title I Aides (1/3 time)
Title I Pullout
Title I Pullout
Resource Room



600 Students
43 Teachers (FTE)
7 Other staff (FTE)
Class size = 16
Teacher time = 10 hrs./week

Redesigned Elementary School
Team 1
100 Students / 7 teachers including
1 with counseling expertise
1 with special ed. expertise
1 with arts expertise
Team 2
Media/ Computer Specialist Lead Teacher (1/2 time)
Team 3
Support Team
Principal Teacher
Secretary
Bookkeeper
Social worker
Team 4
Media/ Computer Specialist Lead Teacher (1/2 time)
Team 5
Team 6

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Restructuring Schools to Support Student and Teacher Learning

Across the country, schools are reorganizing their work to provide more time for student learning, more personalized relationships between teachers and students, and greater opportunity for teachers to work and plan together in teams. Providing teachers with the time they need to work with colleagues and keep up with advances in their profession depends largely on schools' willingness to rethink staffing patterns. A study of the allocation of teachers in the Boston public schools found that even with a pupil-teacher ratio of only 13:1, regular class sizes averaged 23 and went as high as 33, because of the assignment of many staff to pullout and specialist positions.

By combining all of the students into regular classroom groupings rather than using pullouts for Title I and special education, class sizes could drop to about 14 in elementary schools. By rethinking schedules, teachers also can have more time for joint planning. Boston schools like Lyons and O'Hearn elementary schools have recently done just that, sometimes teaming regular and special-education teachers to work together. At Ashley River Elementary in South Carolina, teachers have 80 minutes a day for planning with their grade-level teams, and class sizes were lowered by reducing the number of specialists and counselors; now 75% of staff are classroom teachers. At Hefferan Elementary School in Chicago, teachers teach four full days of academic classes each week and spend the fifth full day planning together with their multigrade teams while students rotate to "resource" classes in music, fine arts, computer lab, physical education, library science, and science lab. At Quebec Heights Elementary in Cincinnati, Ohio, teachers have found 5.5 hours a week to plan together and have lowered pupil-teacher ratios to 15:1 by creating multi-age clusters of students and teachers, integrating special education teachers into cluster teams, and eliminating separate Title I classes. In all of these cases, evidence shows that students are learning more as teachers develop their expertise.

In high schools, combining subject areas such as English, history, and writing can substantially reduce teaching loads and create time for teachers. This strategy has been used in many of the more than 100 new, small restructured high schools in New York City recently created to replace failing comprehensive high schools. The new schools often create interdisciplinary teams of teachers who share students, and they establish block schedules that reduce teachers' pupil loads while creating more shared planning time. In one model, each teacher teaches two classes (either humanities or math/science) that meet for nearly two hours daily, four times per week. With class sizes of around 20, this results in a total pupil load of 40. Virtually everyone in the school teaches: about 70% to 75% of all staff as compared with the usual 50% to 55%. Teachers have about seven hours a week to plan together in addition to five hours of individual "prep" time. The co-directors teach some classes and counsel students in advisories—small groups of students who meet weekly with teacher advisers. There are no guidance counselors, attendance officers, assistant principals, supervisors, or department heads, and few security guards are needed because students are so well known. Studies have found that attendance, grades, graduation rates, and college-going rates are all higher in these restructured schools than in the traditional schools they are replacing.

By contrast, teachers in a traditional New York high school of 3,300 have class sizes of 33 and see 167 students per day, although student-adult ratios are only 13:1. Teachers have no joint planning time because the school's person-hours are consumed by the large number of nonteaching staff: 9 assistant principals, 11 guidance counselors, 13 secretaries, 10 school-based services specialists, 17 security guards, 22 nonteaching school aides, 14 paraprofessionals, and 3 librarians. Students and teachers experience the anonymity of the factory model school, which produces far less learning for them both.

Teams that include many kinds of expertise and share groups of students can plan more effectively for students and use time more productively. Resources are better used when they go directly to the classrooms, rather than sitting around the periphery of the school to be applied in brief encounters with students or in coordinative rather than teaching roles.

	Traditional High School	**Restructured High School**
Total students	3,380	450
Ratio of student to staff	13:1	10:1
% of Staff who are full-time teachers	58%	73%
Average class size	33	18
Average pupil load	167	36
Joint work time for teachers	45 minutes/week	7.5 hours/week

Sources: Linda Darling-Hammond, "Restructuring Schools for High Performance," in *Rewards and Reform: Creating Educational Incentives that Work*, edited by Susan Fuhrman and Jennifer O'Day (San Francisco, Calif.: Jossey-Bass, 1996); and Karen Hawley Miles, "Freeing Up Resources for Improving Schools: A Case Study of Teacher Allocation in Boston Public Schools," *Educational Evaluation and Policy Analysis* 17 (Winter 1995): 476-493.

engaged in teaching, teachers could have both greater time for collaboration and learning *and* smaller class sizes and pupil loads. In the Commission's view, world-class teaching depends on world-class benchmarks. Most nations invest 60% or more of their staff resources in teachers; we should aim for no less.

These investments in teachers should be accompanied by investments in technology that extend the capacity of every teacher and child to connect with an infinite variety of resources and tools for learning. The potential of computers and other technologies to transform teaching remains to be explored in most schools, in part because technology plans have assumed all that was needed were hardware and a few software programs to get them going. Staff development has been largely overlooked, as have communications connections within and beyond the boundaries of the school. Consequently, where computers are available, they are largely tools for word processing or for reinforcing simple skills; rarely are they integrated into the curriculum or used for creating new communication possibilities and sources of information.

Well used, technology can change teaching and learning and improve achievement by encouraging more independent work as well as teamwork and collaborative inquiry; teaching concepts, systems and problem solving as well as basic skills; adapting instruction to student learning needs; presenting more complex material to students who are ready; and allowing teachers to take on the role of coach rather than lecturer.[121] Technologies also can assist teachers in accessing materials for their lessons, tracking student progress, and communicating with parents and colleagues. Teacher training and support can be enhanced with video

Transforming Teaching through Technology

As a teacher at the Saturn School in St. Paul, Minnesota, David Haynes and his students had access to technologies most teachers can only dream about. "I could consult with other teachers and other professions anywhere in the country. I was in contact with other staff in the building for planning and integration. But the most powerful change in me as a teacher is the way in which it forced me to recognize the capacities children have. Technology is very student-centered. It is definitely not teacher-centered," David claims.

Even without all of the Saturn School's resources, technology can transform teaching. Using only his laptop connected to a monitor, science teacher Damon Moore in Richmond, Indiana, has created a new environment for learning in his classroom. His students use an electronic encyclopedia, follow the human genome project on the Internet, and teach segments of lessons drawn from their research using electronic databases. "Technology gives me an opportunity to level the playing field for all my kids," Damon explains. "Students can explore and build knowledge in lots of different ways. My job becomes one of guide and interpreter."

Technology can also support teacher learning. A group of beginning teachers from Harvard University, connected via electronic network, were able to support one another and consult with their professors in their initial years of teaching. Another group of experienced teachers from around the country has worked for several years to develop alternative assessments and new teaching strategies in their classrooms. They share student work, teaching dilemmas, and other experiences on-line as part of the Four Seasons Network—a collaboration of the Coalition of Essential Schools, Foxfire Teacher Outreach Network, Project Zero, and the National Center for Restructuring Education, Schools, and Teaching (NCREST). In all of these cases, teachers' connections to resouces translate into learning opportunities for students.

and telecommunications networks, on-line resources for learning, opportunities to view models of effective teaching, computer and video simulations and cases, and electronic links among student teachers, mentors, and faculty.

To take full advantage of the possibilities of cyberspace, schools need to move from stand-alone computers to connected systems providing on-line access. Teachers and administrators need time and training to envision how new technologies can be used, opportunities to experiment, and just-in-time support for their use. To get schools launched on the information highway, at least one-third of expenditures for computers in schools (an amount that exceeded $2 billion in 1993)[122] should be devoted to professional development to ensure that educators can use these resources well. Of all the things schools could spend money on, teachers and technology are the areas that are likely to offer the greatest payoffs.

- **Provide venture capital in the form of challenge grants to schools for teacher learning linked to school improvement and rewards for team efforts that lead to improved practice and greater learning.**

Schools will not change unless there are incentives that inspire new collective learning and action and rewards that recognize the changes that have occurred. Initiatives like Ohio's Venture Capital Fund, Maine's Innovative Educational Grants, and Iowa's School Improvement Program have been particularly productive in getting faculties to study and undertake major changes in school practices that improve overall school performance. These initiatives all challenge faculties to identify their schools' problems and dilemmas, intensively study alternatives, and put the best ideas into operation. Lasting changes have been triggered by these kinds of high-leverage incentives that reward staff learning aimed at systemic change tied to student learning.[123]

In addition, schools that change their practices to meet professional teaching standards, and that succeed in increasing learning for a wide array of students, should be recognized for their achievements in a way that promotes learning for other schools across the system. To transform systems, incentives must be structured to promote collaboration and knowledge-sharing across organizations, as well as competition among ideas to recognize those that work well. In Ohio, a consortium of business, community, and education organizations—Building Excellent Schools for Today & the 21st Century (BEST)—works together to launch school improvement initiatives in communities across the state and to recognize, reward, and disseminate successful practices. Ohio's BEST Practices Awards provides one model for sharing knowledge about successful strategies. Another model for such awards is IMPACT II, an extremely successful program that provides grants to teachers who have created innovative programs to work with others who receive grants to learn how to use these ideas. Such a program for schools would provide awards to high-performing schools that enable them to extend their work and share it with others.

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- **Select, prepare, and retain principals who understand teaching and learning and who can lead high-performing schools.**

If students deserve a qualified teacher as an inalienable right, teachers deserve a highly qualified principal as a right as well. Principals are key leaders and gatekeepers of reform in schools. If schools are to become genuine learning organizations, school leaders must have a deep understanding of teaching and learning for adults as well as children. The job of school leader began as that of a principal teacher, and this conception has become even more relevant as the focus of the school recenters on academic achievement for students. Principals should come from among the ranks of highly skilled teachers, and they should continue to teach at least part of the time, as do most European, Asian, and private school directors. To serve as instructional leaders, they should understand the curriculum and assessment principles that underlie new standards and the learning and development theories that teaching must build upon.

In tomorrow's schools, principals also must know how to lead organizations in which leadership and decision making are shared, and continual learning is fostered for staff and parents as well as students. In a learning organization, the primary job of management is professional development, which is concerned with the basic human resources of the enterprise and people's capacities to do the central job of the organization. For all members of the organization, that job is teaching and learning. To lead the schools of the future, principals will need to appreciate adult learning and development as well as that of children and know how to nurture a collaborative environment that fosters continual self-assessment. They will also need to be able to envision and enact new organizational arrangements in schools so that time, staffing patterns, and relationships between teachers and among teachers, students, and families better serve the goals of serious learning and high-quality teaching.

Standards that should guide the preparation of principals begin with teaching standards—principals of the future should be drawn from among the ranks of National Board-Certified teachers—and continue with licensing standards like those recently developed for school leaders by a consortium of states under the auspices of the Council for Chief State School Officers. Preparation in professionally accredited institutions will also ensure that principals' training reflects the demands of student standards. In a two-year graduate program tied to the authentic activities of educational leadership, candidates would maintain a school-based position while taking ongoing coursework that develops analytic, political, and research skills along with knowledge of curriculum, teaching, assessment, staff development, and policy. Like teachers, principals should complete a yearlong internship during which they assemble a portfolio of evidence about their work as leaders and facilitators of learning and teaching.

As with teachers, initial preparation for the principalship is just the beginning of life-long learning. In fact, principals are often more isolated than teachers and in need of much more collegial support than they generally have available. Principals need the metaphorical jungle gym of learning opportuni-

In the restructured, revisioned schools of the next century, I see an organization that is more flexible, more community centered and characterized by co-leadership roles. The hierarchical ladder will be replaced with a structure not dissimilar to the jungle gym of our childhood in which we can weave in and out, up and down, building upon prior experience and developing skills, scaffolded in new risks and experiments, and connected to the strong web-like structure that undergirds our efforts. . . . The role of the principal teacher will be to link vision, theory, action, school organization, reflection, and assessment to create a self-improving organization in which all are learners.

—Lynn Stuart, Principal, Cambridgeport School, Cambridge, Massachusetts ties that Lynn Stuart describes to anchor them in the same rich environment of change, learning, and reflection that surrounds teachers. Districts must learn how to support them in ongoing professional development and problem solving with other principals as well as teachers, creating opportunities for collaboration and mutual assistance that go well beyond housekeeping chores to the fundamental concerns of learning and teaching.

These investments in teacher and principal learning are among the most critical the nation can make. Strong teachers and principals stand in a place that matters to America's future.

A Better Way: Learning to Teach in the 21st Century

For as long as she could remember, Elena had always wanted to teach. As a little girl, she would sit and read to toddlers, round her friends up to play school, and explain the mysteries of the universe to anyone who would listen. Later, as a peer tutor, she loved the feeling she got whenever her partner learned something new. In high school, she began to look with real interest at the many ways young children learn when she served as a teacher's aide for her community service project. She linked up with other students through an Internet group started by Future Teachers of America. She felt she could spend a lifetime studying children without ever running out of new discoveries.

When she arrived at college Elena knew she would want to prepare to teach, so she began taking courses in developmental and cognitive psychology early in her sophomore year. She chose mathematics as a major and applied in her junior year for the five-year course of study leading to a Master of Arts in Teaching at her university. After a round of interviews and a review of her record thus far, she was admitted into the highly selective teacher education program.

The theories Elena studied in her courses came to life before her eyes as she conducted a case study of John, a seven-year-old boy whom she tutored in a nearby school. She was amazed by John's amazing ability to build things in contrast with his struggles to learn to read. She carried these puzzles back to her seminar and on into her other courses as she tried to understand learning. Over time, she examined other cases, some of them available on a hypermedia computer system that allowed her to see videotapes of children, samples of their work, and documentation from their teachers about their learning strategies, problems, and progress. From these data, Elena and her classmates developed a concrete sense of different learning approaches. In one of these sessions, Elena began to understand how John might be more adept at spatial tasks and less comfortable with verbal ones. She began to think about how she could use his strengths to create productive pathways into other areas of learning.

In her mathematics courses, Elena worked on simulations, modeling, and statistical analyses with students in engineering, architecture, and the social sciences. She deepened her knowledge of mathematics through the study of applications that would be important to her future students as well as herself. These courses were also linked to her work in cognitive psychology. Elena kept a journal of how she herself learned mathematics—what kinds of teaching made the concepts more accessible and what mystified her—and she interviewed fellow students about their experiences, including "math-phobics" who found the field terrifying. In her other courses, she also kept track of which learning experiences helped her and which she found hard to fathom, thus creating an ongoing database for investigating learning.

Elena's education courses gave her the chance to observe and work with students in elementary, middle, and high schools as well as in recreation centers and community sites. Because she was always applying her learning, she never found theory dull or abstract. To the contrary, she found it gave her a powerful set of lenses to bring to bear on the world. In addition, her teachers modeled the kinds of strategies she herself would be using as a teacher: Instead of lecturing from texts, they enabled students to develop and apply knowledge in the context of real teaching situations. These frequently occurred in the professional development school (PDS) where Elena was engaged in a yearlong internship guided by a faculty of university- and school-based teacher educators.

In the PDS, Elena was placed with a team of student teachers who worked with a team of expert veteran teachers. Her team included teachers of art, language arts, and science, as well as mathematics. They discussed learning within and across these domains in many of their assignments and constructed interdisciplinary curriculum together. Most of the school- and university-based teacher educators who made up the PDS faculty had been certified as accomplished practitioners by the National Board for Professional Teaching Standards, having completed a set of rigorous performance assessments, including a portfolio of evidence about their teaching. The faculty created courses, internship experiences, and seminars that allowed them to integrate theory and practice, pose fundamental dilemmas of teaching, and address specific aspects of learning to teach.

Located in a port city that served a broad range of racial, ethnic, and economic groups as well as recent immigrants from more than 40 countries, the professional development school enabled new teachers to learn how to support learning for new English-language learners and to examine teaching from many cultural perspectives. In her seminars linked to classroom work as an intern, Elena learned how to identify various learning styles and needs; how to address misconceptions students might hold about specific subject matter concepts; and how to develop teaching strategies for common learning problems like dyslexia. She learned how to construct lessons that would allow entry points for different kinds of learners.

Her work in the PDS included observing and documenting specific children; evaluating lessons that illustrated important concepts and strategies; tutoring and working with small groups; sitting in on family conferences; engaging in school and team planning meetings; visiting homes and community agencies to learn about their resources; planning field trips and curriculum segments; teaching lessons and short units; and ultimately taking major responsibility for the class for a month at the end of the year. This work was supplemented by readings and discussions grounded in cases of teaching.

A team of PDS teachers videotaped all of their classes over the course of the year to serve as the basis of discussions of teaching decisions and outcomes. These teachers' lesson plans, student work, planning journals, and reflections on lessons were also available in a hypermedia database. This allowed student teachers to look at practice from many angles, examine how classroom situations arose from things that had happened in the past, see how lessons turned out and what students learned, and understand the teacher's thinking as she made decisions. Because the PDS was also wired for video and computer communication with the school of education, master teachers could also hold conversations with student teachers by teleconference or e-mail when on-site visits were impossible.

In her classroom work and research, Elena learned how to look at and listen to students so as to understand their experiences, prior knowledge, and learning strengths as well as difficulties. She learned how to create engaging tasks that would stretch and motivate them and how to scaffold the learning process so they could then succeed at challenging work. She began to figure out how to juggle and balance the competing demands of individuals and groups, curriculum goals, and student interests. She learned how to reach out to students who might otherwise slip through the cracks. She learned how to learn from her own teaching and that of her colleagues.

Elena worked to develop authentic learning opportunities for her future students and to evaluate her own teaching. Whereas her students' products were arithmetic problems and puzzles, survey projects, mathematical models, and scientific experiments, Elena's own exhibitions were the lessons and units she designed; the research she conducted about the classroom, school, and community; and her assessments of her students. Some of this work, including case studies of students, curriculum designs, and videotapes of her teaching, was assembled on a videodisc portfolio that would allow the state licensing agency and future employers to evaluate aspects of her work as a supplement to interviews and licensing examinations.

When Elena finished her rich, exhausting internship year, she was ready to try her hand at what she knew would be a demanding first year of teaching. She submitted her portfolio for review by the state professional standards board and sat for the examinations of subject matter and teaching knowledge that would grant her an initial teaching license. She was both exhilerated and anxious when she received a job offer, but she felt she was ready. She was comforted by the fact that her cohort of fellow graduates and teachers would be available to her throughout the year in an on-line study group as sources of materials and experience.

Elena spent that summer eagerly developing curriculum ideas for her new class. She had the benefit of advice from the district mentor teacher already assigned to work with her in her first year of teaching and an on-line database of teaching materials developed by teachers across the country and organized around the curriculum standards of the National Council of Teachers of Mathematics, of which she had become a member. She could access writers and users of these materials on-line to discuss how they had designed and used particular ideas and to work on how they might be adapted to the needs of her students.

Elena's mentor teacher worked with her and several other new middle school mathematics and science teachers throughout the year, meeting with them individually to examine their teaching and provide support. The mentors and their first-year colleagues also met in groups once a month at the professional development school to discuss specific problems of practice. These meetings kept Elena connected to many of her friends and teachers from the university and to a group of expert veteran teachers across the district who brought with them many different kinds of expertise. With these resources and those of her teaching team at the middle school, Elena never felt as though she was alone in her efforts to tackle the many challenges of beginning teaching.

The most engrossing part of her initiation was the students. Elena was as delighted and intrigued by their interests, energy, and thinking as she had been when she was a student herself. Although she found teaching challenging, she did not feel overwhelmed by classroom management issues as beginning teachers once had. Her internship and ongoing mentoring had prepared her to set up a well-functioning classroom from the start, and she already had experience developing lessons and using a range of teaching strategies.

She met weekly with the other math and science teachers in the school to discuss curriculum plans and share demonstration lessons. This extended lunch meeting occurred while her students were in a Project Adventure/physical education course that taught them teamwork and cooperation skills. She also met with the four other members of her teaching team for three hours each week while their students were at community service placements. The team used this time to discuss cross-disciplinary teaching plans and the progress of the 80 students they shared. In these two different settings, Elena had access to her colleagues' knowledge about both subject matter and students.

In addition to these built-in opportunities for daily learning, Elena and her colleagues benefited from the study groups they had developed at their school and the professional development offerings at the local university and Teachers Academy. The study groups, created each year based on faculty interests, met during the school's staff development sessions on Friday afternoons while students were in their academic clubs. Each group was led by a faculty member and had funds to purchase books, materials, or consulting help. This year groups were studying strategies for supporting mainstreamed instruction of learning-disabled students; improving the teaching of research skills; implementing the state's new mathematics and science curriculum standards; and understanding language development for new English-language learners. Elena was attending the first of these because she had several children in her classes who were recently mainstreamed and she wanted to know more about how to help them learn mathematics.

At the Teachers Academy, school and university-based faculty taught extended courses in areas ranging from advances in learning theory to teaching methods in fields from elementary science and reading to advanced calculus. These courses usually featured case studies and teaching demonstrations as well as follow-up work in teachers' own classrooms. Multimedia conferencing allowed teachers to "meet" with each other across their schools and to see each others' classroom work. Teachers could also connect to courses and study groups at the university, including a popular master's degree program that helped teachers prepare for National Board Certification. The Academy provided technologies needed for on-line conferencing and televised classroom observation. It also sponsored meetings for many of the networks that teachers used to create professional learning communities for themselves, such as the National Writing Project, the Urban Mathematics Collaborative, the School Development Program, and the Coalition of Essential Schools.

Elena knew that all of these opportunities would be available to her when she was ready for them. With the strength of a preparation that had helped her put theory and practice together, and with the support of so many colleagues, Elena felt confident that she could succeed at her life's goal: becoming—and as she now understood, always becoming—a teacher.

Next Steps: Putting It All Together

These, then, are the Commission's core recommendations: Rely on high-quality standards for learning and teaching; reinvent teacher preparation and professional development; recruit qualified teachers for every classroom; encourage and reward knowledge and skill; and re-create schools as learning organizations.

Developing recommendations is easy. Implementing them is hard work. Literally hundreds of education reports of the past decade have issued proclamations and recommendations by the dozens. Many have fallen on deaf ears. Reports do not implement themselves, but must be put into practice by policymakers and the profession. What follows is a road map of next steps to get us from where we are today, in 1996, to where we want to be tomorrow, in the year 2006.

The first step is to recognize that these ideas must be pursued together—as an entire tapestry that is tightly interwoven. Pulling on a single thread will create a tangle rather than tangible progress. The second is to understand that everyone must shoulder his or her share of the burden of transforming American schools. If we think this transformation too difficult to attain, we must again learn the wisdom of the well-known African proverb, "It takes a village to raise a child."

To raise learning in America to new levels, everyone will have to do more, make sacrifices, and work harder with a shared sense of purpose among school, family, and community. Too often today we find avoidance of responsibility and a circle of blame where the failures of education are concerned. The finger-pointing must come to an end—up and down the line from the federal government to the family and student. There is ample work ahead for everyone.

The second step is to build upon the substantial work that has been undertaken over the past decade. Schools have not been standing still while the world changes around them. Since 1986, when a series of reports called for improvements in teaching, many schools of education have met more rigorous standards of quality; more than 300 have created graduate-level programs, many of them featuring professional development school partnerships; thousands of school districts have redesigned schools and have begun to reshape teaching; new programs for teacher induction and evaluation have been invented in a number of places; teacher networks and academies have been established; and a number of states have begun to invest in professional development. New standards and assessments for licensing and certification developed by the National Board and by consortia of states provide levers for transforming preparation and practice on a broad scale.

The issue is how to move from a panoply of individual disconnected efforts to a coherent system of supports for high-quality teaching available to every teacher in every community. There are, as we have noted, important policy steps to be taken. And there are investments to make, although our analysis suggests that major parts of the costs of our recommendations should be managed through reallocations of resources from places where they are currently spent ineffectively—and that sizable benefits and cost savings will result from the individual and collective proposals we have made.

Reallocating Resources

Our proposals call for rethinking school structures and roles and reallocating educational dollars. If teachers assume many of the instructional tasks currently performed by administrative staff (for example, mentoring and supervision), the layers of bureaucratic hierarchy will be reduced. If teachers are more carefully selected and better trained and supported, expenditures for management systems to control incompetence will become unnecessary. If investments are made in the beginning of the teaching career for support and mentoring of entering teachers and for pretenure evaluation, the costs of continually recruiting and hiring new entrants to replace the 30% who leave in the first few years will decline; the costs of band-aid approaches to staff development for those who have not learned to teach effectively will be reduced; and the costs of remediating or seeking to dismiss poor teachers—as well as compensating for the effects of their poor teaching on children—will decrease. Strategic investment in teacher competence should free up resources for innovation and learning.

Rethinking Staffing

In terms of reallocation, we recommend that at least half of the more than $80 billion spent annually on nonteaching costs in public schools be redirected toward investments in a greater number of teaching staff who have much more time scheduled each day for joint work and planning. At current salaries, this would add an additional one million teachers to the teaching rolls, raising the share of teaching staff to nearly 60% of the total, not as high as that in other countries, but substantially better than the current ratio of under 50%.

As others have noted, including the Carnegie Task Force on Learning in the Primary Grades,[124] we must make more effective use of our current investments in education. There are existing sources of funding that could be used for instructional changes to produce much higher achievement for pupils if they were redirected to approaches that have been shown to work. We agree with this analysis. At the same time, we stress that the process of reorganizing districts and schools should proceed incrementally and responsibly. Slashing administrative budgets or reallocating staff without careful planning and analysis can prove disastrous for the operations of systems. Schools' support systems must be redesigned for new staffing patterns to work well.

With thoughtful planning, reallocation of personnel should be accomplished over the coming years in two ways: First, by reducing as much as possible the number of nonteaching staff assigned to programs and functions outside the school. This will require restraint on the part of policymakers in their tendencies to create heavily regulated categorical programs that carry large administrative burdens. It will also require decentralization and redesign of some functions that have been increasingly centralized in school district offices over the past several decades, such as supervision, program administration, and many school support functions, such as maintenance, purchasing, and the like.

These changes rely in part on a shift in management theory from the 1950s' view that centralization always produces greater efficiencies and economies of scale to one that seeks an optimal blend of centralized and decentralized management. It also means an acknowledgment that greater productivity is likely to result from direct investments in teacher and principal competence than from efforts to create accountability through top-heavy inspection and reporting systems that cannot in the long run produce good practice. New York City's Community School District #2 provides a useful example of how funds can be reallocated from central office hierarchy to direct investments in teacher and principal learning and performance review.

Second, the number of classroom teachers can be increased by restructuring the use of staff within schools. As we described in the previous chapter, many schools have increased the proportion of within-school staff who are classroom teachers from the usual 50-55% to 70% or more by assigning regular teaching responsibilities to administrators, specialists, pullout teachers, and counselors who currently sit at the periphery of the teaching/learning enterprise rather than at the center. This has allowed them to both reduce class sizes and pupil loads and to create shared responsibility and planning time for teachers. Creating teaching teams that provide a mix of expertise and take direct, long-term responsibility for children is more effective than placing experts on the side to work with children or teachers in short, disconnected interludes. By redesigning their work, the same staff can be used in much more effective ways.

There are some difficult dilemmas to be confronted in this process. Several studies have found that the share of total resources and teachers devoted to regular education has declined since the 1960s (from 80% to 59% according to one study),[125] and that increases in special education spending (from under 5% to nearly 15%) include large shares for paraprofessionals and nonteaching personnel associated with placement processes rather than instruction. Use of pullout services also contributes to larger classes for regular education teachers and more fragmented service delivery for students. Rethinking the delivery system associated with these critically important special education services seems essential. Greater investments in teaching will require new approaches to identification and placement. Efforts to reduce pullouts will rest both on new organizational and staffing strategies[126] and on growing expertise on the part of all classroom teachers for teaching a wider range of learners.

In addition, as the Carnegie Task Force on Learning in the Primary Grades

Management as Professional Development in New York's District #2

Can school districts make a difference in what schools do and what students learn? This question is raised as school restructuring has often bypassed districts, which have been viewed as either extraneous or hostile to change. Some districts, however, have taken a proactive role in transforming teaching and learning. New York City's Community School District #2—a diverse, multilingual district of 22,000 students—has made professional development the central focus of management and the core strategy for school improvement. The strong belief governing the district's efforts is that student learning will increase as the knowledge of educators grows.

The district's extensive professional development efforts, which are paying off in rapidly rising student achievement, include several vehicles for learning. ***The Professional Development Laboratory*** allows visiting teachers to spend three weeks in the classrooms of expert resident teachers who are engaged in practices they want to learn. ***Instructional consulting services*** allow expert teachers and consultants to work with groups of teachers within schools to develop particular strategies, such as literature-based reading instruction. ***School visitations and peer networks*** are designed to help teachers and principals examine exemplary practices. The district budgets for 300 total days each year so that teachers and principals can visit and observe one another, develop study groups, and work together. ***Off-site training*** includes intensive summer institutes that focus on core teaching strategies and on learning about new standards, curriculum frameworks, and assessments. These are always linked to follow-up through consulting services and peer networks to develop practices further. ***Oversight and evaluation*** of principals focuses on their plans for instructional improvement in each content area, as does evaluation of teachers. There is close, careful scrutiny of teaching from the central office and at the school and continual pressure and support to improve its quality.

A key feature of these strategies is that they have focused intensely for many years on a few strands of content-focused training designed to have cumulative impact over the long term, rather than changing workshop topics every in-service day or picking new themes each year. The district has sponsored eight years of intensive work on teaching strategies for literacy development and four years on mathematics teaching. These efforts are guided by several principles:

1. It's about instruction, and only about instruction. The district conveys the message in everything it does that the work of everyone in the system, from central office administrators to staff in schools, is providing high-quality teaching to students.

2. Instructional change is a long, multistage process. Learning begins with awareness of new ideas, followed by opportunities for planning, chances to try them and receive feedback, and time for reflection with others in order to refine practice.

3. Shared expertise drives instructional change. District staff and consultants regularly work with school staff on specific instructional approaches. Principals and teachers engage in regular team meetings on curriculum and teaching, visit other schools and classrooms, and work together on districtwide staff development issues.

4. Focus on systemwide improvement. The enemy of systemic change, according to District 2 staff, is the "project," which isolates and balkanizes new ideas and makes improvement the responsibility of a select few. To create systemic change, principals and teachers must regularly collaborate with others to examine and develop their practice.

5. Good ideas come from talented people working together. The key to improvement is always people and their knowledge. Recruitment of highly talented professionals and development of their skills is the top priority. Weak principals and teachers are aggressively counseled out. Problems are always addressed by putting people together to learn from one another.

6. Set clear expectations, then decentralize. The district focuses on getting, developing, and keeping good people and clarifying their mission. Then it gets out of the way.

7. Foster collegiality, caring, and respect. Helping people take risks and take on more responsibility for children requires the cultivation of a deep personal and professional respect that is communicated at every level.

Source: Richard F. Elmore, "Staff Development and Instructional Improvement, Community School District 2, New York City" (paper prepared for the National Commission on Teaching & America's Future, 1996).

points out, schools' increased investments over the last two decades in untrained school aides have not always been used as productively as they might. In some cases, aides serve housekeeping rather than instructional functions. In some others, they are given full responsibility for the instruction of special-needs students without adequate training. We recognize that there are necessary and productive arrangements for teaming teachers with paraprofessional staff who provide a very important set of services. We also recognize that if more paraprofessionals were recruited into teaching through high-quality preparation programs, class sizes could be lowered and greater expertise could be brought to bear on the education of students, especially those who most need skilled teaching. Another cost-effective way to add trained personpower to classrooms would be the use of teaching interns from extended teacher preparation programs as teaching assistants.

Redirecting Professional Development Funds

We have noted that while many districts spend relatively little on the direct costs of staff development, such as district-sponsored workshops, large amounts of hidden expenditures in the form of staff time and salaries are spent in ways that are now often less focused and effective than they might be. Of an estimated $19 billion spent annually on the portion of teacher salaries granted for education credits, we recommend that one-half be gradually redirected to restructured compensation systems that incorporate salary steps for performance-based licensing and National Board Certification along with experience and other education.

In addition, we have argued that funds currently spent on ineffective one-shot workshops would be better spent on more useful forms of professional development, including support for teachers' in-school study groups, peer coaching, and other problem-solving efforts as well as teacher-to-teacher networks, teacher academies, and school-university partnerships. Both existing and new funds should be more purposefully targeted on helping teachers learn how to use curriculum and assessments aimed at new standards for student learning. Professional development days sprinkled throughout the year and used for ineffective "one-size-fits-all" staff development should be consolidated and expanded to create a block of at least ten days of time that teachers can spend planning and learning together at the end of the students' school year. At least half the costs of this additional time for teachers is already present in district budgets for professional development time. The remainder should be funded by the new state investments we describe below.

Investing in Strategic Improvements

The estimated additional costs of our key recommendations total just under $5 billion annually, which is less than 1% of the amount expended without fanfare for the federal savings and loan bailout of several years ago. This amount is not too much, we believe, to bail out our schools and to secure America's future.

We believe that the critical new investments should be directed at

1. **Teacher education reforms** aimed at developing extended graduate-level programs that include internships in professional development schools;

2. **Recruitment,** including subsidies that underwrite the preparation of highly able individuals to teach in high-need fields and locations;

3. **Reforms of beginning teacher licensing and induction,** especially the implementation of new performance assessments that develop and test teaching knowledge and skill, and the creation of mentoring supports for beginning teachers; and

4. **More focused and effective professional development** organized around new student standards and standards for accomplished teaching, including the use of new technologies. We urge that states allocate an additional 1% of state and local funds for this purpose, in addition to matching grants to local school districts that increase their investments in professional development.

Type of Investment	Basis of Estimate	Cost per Year
Scholarships for able recruits in high-need fields and areas	25,000 candidates at $20,000 per candidate for a four-year commitment to teaching[1]	$ 500 million
Teacher education including internships in professional development schools	125,000 new teachers annually at $7,000 per candidate[2]	$ 875 million
Mentoring supports and new licensing assessments for all beginning teachers	125,000 new teachers annually at $6,000 per candidate[3]	$ 750 million
New state funds for professional development	1% of total state/local funds for education (plus) matching grants for local school districts	$1.750 billion $1.000 billion
TOTAL		**$4.875 billion**

[1] $20,000 should fund a major share of the costs of teacher preparation for three years of an extended program that begins in the junior year of undergraduate school at a state university or one to two years of graduate-level teacher education in an MAT program. A four-year commitment to teaching predicts greater long-term retention in the profession.

[2] The estimate of 125,000 new teachers annually is based on current trends that project that half of all newly hired teachers will be newly prepared, while the remainder reenter from the reserve pool of former teachers. Costs are based on estimates for operating professional development schools and creating fifth-year internships within teacher education programs. See Richard L. Clark, "Professional Development Schools: Costs and Finances" (National Network for Educational Renewal, February 1996).

[3] Costs are based on district estimates in Cincinnati, Rochester, and Toledo that they spend about $6,000 per teacher for high-quality mentoring programs for beginning teachers, and estimates that initial development costs for new performance assessments for licensing could reach $1,000, some portion of which would be offset by candidate fees and by in-kind provision of relicensing credits in lieu of compensation to veteran teachers who serve as assessors.

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Whereas states have the primary responsibility for basic school funding and initial teacher licensing, the federal government also has a natural and longstanding role to play in supporting the recruitment and preparation of a capable teaching force. These investments should represent a partnership in the effort to build a strong foundation for the nation's future.

The Commission's charge to the American people is simple—ensure that every student, in every class, is taught by qualified teachers. Instead of cluttering the agendas of everyone involved with multiple actions, the Commission believes the country can close in on that goal if each actor takes responsibility for a major part of the total effort and commits to doing his or her part well.

Time is short. Demographics work against taking too long to make decisions and take action. School enrollments are mushrooming, especially among populations needing the best teaching skills. More important, the opportunities to re-create teaching as a standards-based profession have never been greater. It is not too ambitious to expect the initiatives recommended for each partner to be well under way by the turn of the century and fully functioning by the year 2006.

State Initiatives in Professional Development

In recent years, states have become more active in supporting and targeting professional development.

New allocations are establishing stable sources of funding for professional development. In **Missouri**, the state has created a pool of funds equivalent to 1% of the state's foundation level times the number of students in the state and set it aside for various improvement activities, including regional professional development centers. In addition, Missouri districts are required to set aside 1% of their foundation budgets for school-based staff development, with allocations decided by school-based teams. **Kentucky**'s new funding formula provides each district with an amount per pupil for professional development, allocated at the school level. Schools must develop plans that are reviewed by the state, using established standards. School districts may apply to the state to use up to five instructional days for professional development, above the four days that are required of all districts. In **Kansas**, districts with approved professional development plans are entitled to additional state aid. **South Dakota** provides each district with $225 per teacher to support three days of staff and curriculum development at the start of each school year.

New institutions for providing professional development have been launched in some states, along with challenge grants for stimulating learning and reform. **Oregon** has developed a statewide Professional Development Center together with a fund of competitive school restructuring grants. **Ohio** has created regional professional development centers, along with a venture capital fund through which schools may obtain additional funding over a five-year period for targeted school improvement activities, and a BEST Practices Award that showcases successful school initiatives. **Maine** supports regional coalitions of school improvement teams, two regional school-university partnerships, and an Innovation Grants Award program for stimulating school-based change. **Iowa** funds school-based inquiry approaches that engage educators in defining and solving their own problems. **North Carolina** established the North Carolina Center for the Advancement of Teaching, a handsomely appointed residential facility that hosts seminars for teachers throughout the state and works directly with districts on reform initiatives. In addition, the Governor's Entrepreneurial School Awards honor innovative schools throughout the state and share their practices. Finally, the state now offers a 4% salary increase for teachers who achieve National Board Certification.

Teacher networks for implementing new curriculum frameworks and assessments have been funded in some states. **California** supports subject-matter collaboratives that provide professional development to teams of teachers around the state's curriculum frameworks. The state has also created networks of trained teacher leaders. **Vermont** supports similar cadres of teacher leaders to work with others on the development, study, and scoring of student portfolios.

Finally, a few states are beginning to use new technologies for professional development. **Nebraska** is using distance technology to provide new learning for mathematics teachers in rural areas via video presentations of teaching strategies and support materials, and an electronic network. **Kentucky** is creating a statewide electronic network to link teachers and institutions through fiberoptics, computer modems, and satellite dishes. And **Michigan** uses instructional television as a medium through which to present innovative approaches to instruction geared to teachers and the general public.

The Consequences of Action . . . and Inaction

There are two futures at hand. One continues our current course in the face of major demographic and economic changes and expanding expectations of schools. In the year 2006, it looks something like this:

Following a brief and familiar flurry of education reform activity in the 1980s and early 1990s, schools settled back down to business as usual. The education governors had come and gone; educational leaders were relieved to have the waves of commission reports shelved and out of the way. A period of teacher shortages had been addressed by modest salary increases and increased use of emergency and alternative certification. By 1995, teacher salaries had returned to the levels of the early 1970s and then stagnated, remaining 30% below those of competing occupations. As momentum for reform receded, teacher recruitment remained problematic, especially in fields like mathematics and science and in cities and the Sunbelt, where enrollments boomed.

As more than 30% of teachers retired over the 1990s, and many new teachers left shortly after they started, continuous shortages led to larger classes, more out-of-field teaching, and more hiring of untrained people. A growing number of teachers serving poor and minority students had formal pedagogical preparation consisting only of a three-week summer course. They desperately wanted to address the learning needs of their students, but their training in such fundamentals as subject matter, learning and development, and teaching methods was too skimpy to provide them with adequate ammunition for the job.

Throughout the 1990s, students in the public education system changed, but schools did not. Great waves of immigration boosted the numbers of poor, minority, and non-English-speaking children to nearly 40% of public school enrollments. Some teachers, who had attended restructured schools of education created in the high tide of reform—and who taught in schools redesigned to focus more intensely on learning—were able to teach these and other students successfully. But their successes could not be replicated in other schools where teachers were less well prepared and schools were not designed to support quality teaching.

The public's periodic concern for low student performance was assuaged by the enactment of "stiffer" requirements: more tests, more course requirements, and more recordkeeping procedures. In only a few places were schools staffed by highly skilled teachers able to respond to these mandates. In most cases, they led to disappointing results: More students were held back and dropped out. More watered-down courses were taught by teachers without adequate training in their fields. More add-on special programs were created to "address" student failure. And more bureaucracy evolved to manage all of the above, draining more dollars from classrooms to support the administration of all these mandates.

Because many teachers did not know how to get the results sought, students' learning was increasingly structured by practice tests and worksheets. Scores in basic skills remained static while scores on higher-order thinking continued to decline. U.S. students continued to rank near the bottom on international tests of more advanced skills.

Earlier enthusiasm for reforms gave way to disillusionment and lower school budgets, as middle-class parents fled to private schools and the general population, made up largely of older citizens without children in schools, voted down tax levies for education. Just as the reforms of the 1960s were replaced in the 1970s by movements to reduce school spending and go "back to the basics," so the reform rhetoric of the 1990s gave way to a backlash against innovation and investment in public education. By the year 2006, public frustration with the schools resurfaced with cries from the business community for employees who could function in an information-based, technological economy. New commissions were born to declare the nation, once again, at risk.

Another future—one that envisions different resolutions of the dilemmas described above—is possible. In this future, teaching continues its progress toward becoming a profession. In the year 2006, a different public education system has emerged. It looks something like this:

Much had changed since the last "crisis" in education during the 1980s. A second wave of reform impelled new coalitions between teachers, administrators, and teacher educators, all of whom began thinking of themselves as members of the same profession with common goals. They developed the first professional definition of teaching knowledge through the National Board for Professional Teaching Standards. This stimulated the creation of state boards that built upon the new vision to create more meaningful standards for teacher preparation and licensing. States worked with colleges to establish internships in professional development schools as part of a master's degree in teaching. Teachers-in-training were coached by expert mentor teachers working in conjunction with university faculty on the reform of schooling and teaching. The new cohort of teachers—more than a million of them—was better prepared than any that had preceded them.

Teacher shortages were met with higher salaries and recruitment incentives. As salaries reached a level comparable with those of other competing occupations, the supply of teachers willing to undergo rigorous preparation programs grew. And as the qualifications of teachers increased, the perceived need to spend large portions of education budgets on massive inspection systems diminished. Long hierarchies that had grown to design, regulate, and monitor teaching flattened out. Teachers took on more professional responsibilities, and schools took on new shapes conducive to professional teaching and intensive learning.

As in other professions, differentiated roles and responsibilities gradually emerged as a means for balancing the requirements of supply and qualifications. Those less extensively trained—such as beginning teaching interns—practiced under the supervision of career professionals, many of whom were engaged in becoming more expert by pursuing National Board Certification. Practitioners worked in teams that jointly assumed responsibility for groups of students. In settings where several teachers and interns were responsible for a group of students over several years, new possibilities emerged for organizing instruction, for collaborating on teaching plans and decisions, and for developing strategies to meet individual children's needs. These structures promoted consultation and peer review of practice that continually improved teaching and learning.

Educators insisted on selecting and inducting their peers based on professional standards of practice and on shared decision-making so they could pool their wisdom about the best use of resources to meet students' needs. Professional knowledge and effectiveness grew as serious induction, sustained professional development, and collaboration replaced the sink-or-swim, closed-door ethos of an earlier era.

Instructional practices changed too. Schools became more focused on higher standards of performance *and* on the needs of students. As teachers became more skilled, they used more powerful methods of teaching and learning: research projects, experiments, debates, and exhibitions replaced superficial texts and worksheets. Students were encouraged to read great books and engage meaty ideas, to construct and solve intellectual problems, and to demonstrate their learning in challenging performances.

More productive approaches to organizing the school day and the school year gave individual teachers and students more time together, reducing the pullouts, pass-throughs, start-ups, and wind-downs that had stolen teaching time and decreased teachers' capacity to come to know students well. Schools became smaller and more personalized. Fewer students fell through the cracks.

Incentives to attract the most expert teachers to the profession's greatest needs and challenges also emerged. Lead teachers redesigned inner-city schools as exemplars of professional practice where they coached new teachers, put research into practice—and practice into research—and put state-of-the-art knowledge to work for children. Equity and excellence became joined with professionalism.

By the year 2006, a renaissance had occurred in American education. The best American students performed as well as students anywhere in the world. The vast majority of students graduated with not only minimal basic skills, but with the capacity to write, reason, and think analytically. Complaints from the business community about the quality of graduates subsided for the first time since World War II. And for the first time since the beginning of the 20th century, a decade was launched without a chorus of commission reports crying crisis in the American public schools. The road taken, as it turned out, was the one that finally made a difference.

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A Call to Action

The Commission recognizes that achieving the changes we have outlined by the year 2006 is far too late for many, many children. The actual timetable is to make changes as rapidly as possible. Every day of delay is a lost opportunity, gone forever for the children not better served.

We want to speak directly to those with the greatest authority to transform recommendations into policy—governors, legislatures, state boards and departments of education, local school board members, superintendents, school principals, and teacher associations. Even more, we wish to speak to those with the greatest stake in the outcome of these discussions—students, parents, and teachers.

To the **nation's governors**, we point out that your responsibilities for education are particularly difficult; they spring from two sources. Under the federal and state constitutions you are responsible for education and are required to provide all children with sound basic education on equal terms. Today, such an education requires that all of your state's children have access to competent teaching. We urge you to establish a coordinating effort in your office that brings together all of the parties responsible for improving teaching within your state and direct it toward that goal. Your coordinator should oversee the following marching orders on your authority:

- Propose legislation to create a state professional standards board to develop coherent standards for teacher education, licensing, and professional development.

- Develop an annual public report on the status of teaching in the state in relation to the issues we have raised here.

In addition, nothing is more important today than a national conversation on changing the course of teaching in America. We urge you to work with legislators, state and local education agencies, universities, and parent groups to convene forums and town meetings in local schools across your state to discuss these issues and this report, and to forge a consensus for state and local action.

State legislators have equally challenging tasks—aligning policies, finance, and procedures for licensing, certification, and development of teachers and developing policies that recruit and reward good teachers.

We urge every legislature to enact legislation that sets aside at least 1% of the total state/local budget for education for high-quality, standards-based professional development each year, to set up a framework for funding professional development schools, and to offer venture capital funds for school improvement. We ask you to establish a professional standards board that includes National Board-Certified teachers. We also urge you to work with standards boards and state departments to strengthen teacher preparation through professsional accreditation and close down weak programs, phasing out funding for those that do not improve over a reasonable period of time. We suggest you reallocate funds from redundant program approval activities to high-quality performance examinations for licensing all entrants based on common assessments of subject matter, teaching knowledge, and skills. We also urge you to develop scholarship programs for preparing top-flight candidates for high-need fields and areas, while providing districts with incentives to hire licensed teachers and to reward Board-Certified teachers. Finally, we ask you to conduct an annual audit of your state's policies in all of the areas we have outlined here, to take stock of your state's current commitments to quality teaching, and to organize efforts for sustained and serious reform.

Legislators at the federal level also can help. The federal government has long supported the building of a high-quality medical profession by offering scholarships and forgivable loans to those who train in shortage fields or volunteer to work in shortage areas, and supporting improvements in medical education and the work of teaching hospitals. Similar incentives in teaching were quite successful in the 1970s, and some authorizations have recently been reestablished—though barely funded—to support the training of prospective teachers. We urge Congress to take seriously the nation's need for qualified teachers in all communities, to fully fund the teacher recruitment proposals currently in Title V of the Higher Education Act (authorized at $76 million but funded at only $1 million) and to aggressively pursue initiatives to seed improvements in teacher education and the creation of professional development schools.

To our colleagues in **state boards of education, state education agencies, and professional standards boards,** we insist that you close all loopholes that allow for lowering teaching standards, including emergency and substandard licenses, and work with colleges to create professionally sound alternative routes into the profession. Work with agencies in other states to develop portable pensions and reciprocal licensing. Encourage new approaches to professional development by helping to establish teacher academies, networks, and school-university partnerships, and allocate funds for ten days of professional learning each year focused around new student and teaching standards.

To **college presidents, deans, and professors,** we urge a shared commitment to the goals for higher education articulated for us by Indiana State University president John Moore, who said, "Our challenge is to prepare new teachers and assist practicing teachers so that both can better help diverse learners successfully meet higher learning goals," and by Vanderbilt University chancellor Joe Wyatt, who declared: "Our nation's future depends on a high-quality public education system and a superior force of educators. There is no more important work." We ask that you deepen your commitment to creating high-quality preparation programs based on professional standards for teachers, principals, and other educators; develop extended programs that include intensive internships in public schools; and create professional development school partnerships with local schools for the simultaneous renewal of teaching and teacher education. We also ask that you recognize that preparing teachers is the business of the whole university: It requires high-quality courses in [illegible] and sciences that model good pedagogy and reveal the fundamental principles of disciplinary inquiry, as well as thoughtful preparation in the school of education itself.

Local school boards and superintendents have a vital role to play. You must

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To those bright young people who want to enter the profession that has been so good to many of us—education—I say "good choice!" My advice to them is not "You're too smart to be a teacher," but rather, "You're too smart *not* to be one." That single affirmation, if made by every educator alive who believes in its truth, could be the greatest impetus ever in our collective move to reform other professions.

— James R. Delisle, teacher, Orchard Middle School, and professor of education, Kent State University, Kent, Ohio

establish environments where hiring and placement policies focus on quality; where exceptional teaching is respected and rewarded; where a diverse, caring, and competent teaching force is sought and supported; and where policies support the professionalism of teachers. We urge you to emphasize quality and streamline hiring procedures; employ only qualified teachers and assign them to the fields in which they are well prepared; allocate more staff and resources to the front lines of teaching; work with teacher associations to develop more effective professional development systems, and redirect portions of existing professional development funds to standards-based work sponsored by teacher networks and academies. We ask you to find time for teachers to work together to learn about new strategies and technologies; and work with unions to develop better systems for teacher evaluation, compensation, and career development that recognize and reward knowledge and skills while keeping good teachers in the profession.

Businesses can make a substantial contribution by sharing expertise and underwriting the installation of new technologies for managing complex personnel systems in schools. You can also make important investments in the professional development of staff by endowing teacher academies, providing management training for shared decision making, and by offering summer positions to teachers in industries where they can update their knowledge and skills.

Principals are challenged as much as any group to fulfill this report's vision. In fact, the vision relies upon school leadership that understands why and how learning and teaching must and can improve. We look to you to help create a learning organization in your school, to re-create the role of principal teacher, and to develop a range of leadership roles by creating new possibilities for shared work and learning among staff as well as parents. Be courageous in examining new strategies for organizing teams, rethinking schedules, and reallocating staff to focus on continuous, well-supported student learning. Encourage research and inquiry inside the school to examine how students are doing and develop strategies for improvement. Work within professional organizations for new standards for principal education and licensing focused on instructional leadership. Use professional standards as a basis for hiring teachers and organizing professional development and evaluation. Continually identify sources of professional learning that support the interests and efforts of the teachers, parents, and administrators with whom you work, as well as your own.

The commitment of **teachers** to the principles in this report and their clear, powerful voices in support of them are absolutely essential. This is an opportunity for teachers to lead their profession. We urge you to take responsibility for making sure policies are adopted locally that give appropriate support to beginning teachers through mentoring and peer review. Embrace and enforce the teaching standards described in this report as a means of improving practice and the profession. Prepare for and fulfill the role of mentor and assessor of beginning teachers in the new performance assessments they undertake. Set National Board Certification as a personal goal and promote Board Certification within your school, district, and state. Look for ways to collaborate with colleagues on work that can improve teaching, curriculum, and school organization in support of student learning. Participate in efforts that encourage promising young people to select teaching as a career.

In addition, work within your associations to meet the challenge of transforming the profession into one that assumes responsibility for meeting the needs of students with a growing base of knowledge, skill, and commitment. Teacher unions, subject matter associations, and other educational groups must join hands to create a union of professionals focused on the job of improving America's schools—first for the students whom they serve and then for those who work within them.

We urge teacher associations to promote the preparation and hiring of well-qualified teachers; aid in the recruitment of a diverse teaching force; and work with local school boards, superintendents, and state policymakers to develop better systems for teacher licensing, development, evaluation, and compensation that enhance and recognize knowledge and skills while keeping good teachers in the classroom. These systems should include encouragements for and appropriate use of National Board-Certified teachers.

Aspiring teachers have a major stake in this agenda. Those of you who choose teaching as a career—either initially or in midcareer—must make sure you enter programs with high standards and a commitment to improving teaching and learning. We urge you, first, to find a practicing teacher to guide you in your choices, preferably one who is certified by the National Board and who exhibits the leadership and skills to inspire dedication to quality teaching. Second, we recommend that you select your preparation program carefully. If it is not professionally accredited, do not waste your time. Ideally, it will provide a five-year program of studies extending past the undergraduate degree or a full year or more at the graduate level. It should emphasize professional standards and extensive teaching practice linked to courses. Your search should be diligent, because your reward will be a satisfying lifetime spent teaching to secure the American future.

Finally, we end where we began, speaking directly to the people with the greatest stake in the learning enterprise—students and parents.

If **parents** do not speak for the proposition that their children are entitled to be taught by qualified teachers, we do not know who will. Speak your mind. Seek allies through local parent groups. Examine the qualifications of your schools' teachers and the criteria for hiring, tenuring, and rewarding teachers. Ask that educators publish and display their credentials, so you know how well they are prepared to serve your child. Ask questions about plans for improving teaching quality and making technologies available in the school. In the end, your local schools will be the better for it, and your children will be better prepared for their future.

Students may think they have no role to play in implementing the recommendations of commissions such as these. But students *are* America's future, and it matters greatly that you take your education seriously, understand why higher standards are needed for you to succeed, and think about how you can contribute to your learning and that of others. We urge students of all ages to seek to understand and appreciate what your teachers are trying to accomplish, ask questions about your studies, talk about your own concerns and interests in learning, work with one another as helpers and peer tutors . . . and consider—perhaps—becoming teachers someday yourselves.

It's the sparks. Every time my students get excited about learning something new, I see sparks shooting from their eyes. And though I could fill a book with everything I have to say about the rewards of teaching, the chance to do something meaningful and fulfilling with my life, whenever I'm asked why I became a teacher, that's always the first and best thing that comes to mind. The sparks.

It's not easy work; in fact, I will say that it is the most challenging work I have ever done. I have to be there with my students in body and soul, day in and day out. It can be draining, and it can sometimes seem like a battleground.

But how do I feel at the end of each day? I feel proud of my students. I feel more knowledgeable about living, teaching, and learning. I feel lucky to be a teacher. I feel . . . full of sparks.

— Irasema Ortega-Crawford, teacher, Mesa, Arizona

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Appendix A: Meetings and Forums of the Commission

The Commission held six meetings at which teachers, administrators, researchers, and policymakers from across the country shared and added their expertise. During this two-year period, nine forums were held for additional feedback, at the annual meetings and conventions of the Commission's policy, parent, community, and teacher education advisory groups. Supplementary meetings and focus groups of parents and teachers were also held.

Meetings

November 15, 1994
Cincinnati, Ohio

March 12-13, 1995
New York, New York

November 19-20, 1995
New York, New York

January 21-22, 1996
New York, New York

June 9-10, 1995
Cullowhee, North Carolina
Asheville, North Carolina

May 17-18, 1996
Raleigh, North Carolina

Forums

February 14, 1995	American Association of Colleges for Teacher Education (AACTE) Annual meeting, Washington, D.C.
July 18, 1995	National Conference of State Legislatures (NCSL) Annual conference, Milwaukee, Wisconsin
July 28, 1995	American Federation of Teachers (AFT) QuEST conference, Washington, D.C.
October 7, 1995	American Association of School Personnel Administrators (AASPA) Annual meeting, New Orleans, Louisiana
October 14, 1995	National Association of State Boards of Education (NASBE) Annual conference, Pittsburgh, Pennsylvania
October 27, 1995	American Association of Higher Education (AAHE) School-College Partnership meeting, Washington, D.C.
November 4, 1995	Recruiting New Teachers, Inc. (RNT), Pathways to Teaching Precollegiate Teacher Recruitment symposium, Pasadena, California
February 24, 1996	National Association of Secondary School Principals (NASSP) Annual convention, San Francisco, California
July 28, 1996	National Conference of State Legislatures (NCSL) Annual conference, St. Louis, Missouri

Supplementary Meetings

October 17, 1996
Policy Advisory Group
Alexandria, Virginia

March 22, 1996
Parent-Community Advisory Group
Washington, D.C.

April 22, 1996
Focus groups of parents and teachers
Wilmington, Delaware

Appendix B: Presentations to the Commission

Linnette Aponte
Teacher Intern, PS 87, New York, New York

Deborah Loewenberg Ball
Professor, Michigan State University

J. Michael Brandt
Superintendent of Schools, Cincinnati Public Schools

Sharon Draper
Teacher, Walnut Hills High School, Cincinnati, Ohio

Carol Edwards
Director of Programs
National Foundation for the Improvement of Education

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Graduate School of Education, Harvard University

Jerry Franson
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Denise Hewitt
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Cincinnati Federation of Teachers

Harry Judge
Professor Emeritus, Oxford University

Rosemarie Kolstad
Professor, East Texas State University

Magdalene Lampert
Professor, The University of Michigan-Ann Arbor

Helen Lee
Teacher, PS 87, New York, New York

Susan Lockwood
Florida Center for Teachers, Tampa, Florida

Phillip Middleton
Teacher, Duplin County, North Carolina

Tom Mooney
President, Cincinnati Federation of Teachers

Scott Murl
Teacher, Avery County Middle School, North Carolina

Allan Odden
Professor and Co-Director, Consortium for Policy Research in Education, University of Wisconsin-Madison

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Sima Rabinowitz
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Larry Rowedder
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Frances Schoonmaker
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Professor, University of North Carolina-Greensboro

Cooper Snyder
Senator, 14th District, State of Ohio
Chairman, Ohio Senate Education and Retirement Committee

Jean Spruell
Teacher, Oak City, North Carolina

Linda Starkweather
Teacher, Lincoln Heights Elementary School
Fuquay-Varina, North Carolina

Carolyn Toben
Center for the Advancement and Renewal of Educators
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Mary Jo Utley
Director, North Carolina Center for the Advancement of Teaching, Cullowhee, North Carolina

Robert Yinger
Professor and Director, Cincinnati Initiative for Teacher Education, University of Cincinnati

Appendix C: Policy, Parent, and Community Advisers

Gordon Ambach
Council of Chief State School Officers

Bob Bhaerman
Quality Education Project for Minorities

Julie Bell
National Conference of State Legislatures

Marsha Berger
American Federation of Teachers

Ronald Blackburn-Moreno
ASPIRA Association, Inc.

Charles Bremer
National Black Caucus of State Legislators

Gene Carter
Association of Supervision and Curriculum Development

Michael Casserly
Council of the Great City Schools

John Cawthorne
National Urban League

Eric Cooper
National Urban Alliance

Jacqueline Danzberger
Institute for Educational Leadership

Sheryl Denbo
National Coalition of Educational Equity Advocates

Timothy Dyer
National Association of Secondary School Principals

Ramona Edelin
National Urban Coalition

Marion Wright Edelman
Children's Defense Fund

Harold Fisher
National School Boards Association

Calvin Frazier
Education Commission of the States

Michael Gordon
National Panhellenic Council

Paul Houston
American Association of School Administrators

David Imig
American Association of Colleges for Teacher Education

Connie Koprowicz
National Conference of State Legislatures

Ivan Lanier
National Black Caucus of State Legislators

H. Michael Lemmons
National Congress of Black Churches

Kay Luzier
National PTA

Ginny Markell
National PTA

Shirley McBay
Quality Education Project for Minorities

Ann McLaren
National Education Association

Charles Marshall
Association for School, College, and University Staffing

Joan Miller
Council of Chief State School Officers

Evelyn K. Moore
National Black Child Development Institute

Frank Newman
Education Commission of the States

Paul Ramsey
Educational Testing Service

Judith Rényi
National Foundation for the Improvement of Education

Mark Rigdon
National Governors' Association

Virginia Roach
National Association of State Boards of Education

Herb Salinger
American Association of School Personnel Administrators

Samuel Sava
National Association of Elementary School Principals

Thomas Shannon
National School Boards Association

Dennis Sparks
National Staff Development Council

Scott Thomson
National Policy Board for Educational Administration

Joseph Vaughan (observer)
Office of Educational Research and Improvement, U.S. Department of Education

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Institute for Responsive Education

Victor Young
The Learning Communities Network, Inc.

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Appendix D: Contributors to Commission Research

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Education Week

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American Federation of Teachers

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National Governors' Association

Katie Haycock
American Association for Higher Education

Richard Ingersoll
The University of Georgia

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Hammond Federation of Teachers, Hammond, Indiana

Ray Pecheone
Connecticut Board of Education

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National Board for Professional Teaching Standards

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Joe Wyatt
Vanderbilt University

Appendix E: Commissioned Papers

Eight technical papers were commissioned to synthesize research and inform the Commission on issues of teacher learning and professional development; policy issues in teacher development; labor-management issues in school reform; teacher recruitment, selection and retention; teacher education; and teaching for diverse learners. The report draws upon each of these papers. They will be published in a separate volume.

Aligning Teacher Education with Contemporary K-12 Reform Visions
Deborah Loewenberg Ball, Michigan State University
Magdalene Lampert, University of Michigan

Developing Practice, Developing Practitioners: Toward a Practice-Based Theory of Professional Education
Deborah Loewenberg Ball, Michigan State University
David K. Cohen, Michigan State University

Organizing the Other Half of Teaching
Julia E. Koppich, University of California-Berkeley
Charles T. Kerchner, Claremont Graduate School

Organizing Schools for Teacher Learning
Judith Warren Little, University of California-Berkeley

Preparing Teachers for Diversity: Historical Perspectives, Current Trends, and Future Directions
Gloria Ladson-Billings, University of Wisconsin-Madison

The Problem of Enactment
Mary M. Kennedy, Michigan State University

Staff Development and Instructional Improvement: Community District 2, New York City
Richard F. Elmore, Harvard University

Transforming Teacher Recruitment, Selection, and Induction
Barnett Berry, University of South Carolina
David Haselkorn, Recruiting New Teachers, Inc.

Appendix F: State-by-State Report Card, Indicators of Attention to Teaching Quality, July 1996

State		Total Quality Indicators (out of 10)	Investments in Teacher Quality		
			Unqualified Hires[1] (% of new hires who are unlicensed) * = 2% or less	Out-of-Field Teaching[2] (% of math teachers without at least a minor) (*@ less than 20%)	Teachers as a % of Total Staff[3] (-/+ % from previous year) (* @ 60% or higher)
Alabama		0	09%	21%	52.5 -
Alaska	*	1	07%	63%	47.6 +
Arizona	*	1	02% *	31%	51.2 +
Arkansas	***	3	09%	20%	52.2 +
California	****	4	13%	51%	51.6 +
Colorado	**	2	04%	35%	53.7 +
Connecticut	***	3	00% *	11% *	54.5 -
Delaware	*	1	00% *	—	54.6 -
District of Columbia	**	2	53%	—	58.2 +
Florida	*	1	17%	39%	48.8 =
Georgia	****	4	07%	35%	48.3 -
Hawaii	**	2	10%	51%	61.8 + *
Idaho	*	1	04%	25%	59.4 -
Illinois	*	1	08%	28%	54.2 -
Indiana	****	4	02% *	30%	48.1 -
Iowa	*****	5	02% *	18% *	52.5 =
Kansas	**	2	00% *	13% *	53.8 -
Kentucky	******	6	01% *	17% *	47.5 +
Louisiana	*	1	23%	31%	49.5 -
Maine	**	2	09%	33%	52.6 -
Maryland	*	1	29%	40%	55.0 +
Massachusetts	*	1	11%	37%	55.9 -
Michigan	***	3	04%	33%	48.9 +
Minnesota	*******	7	00% *	14% *	62.7 = *
Mississippi	*	1	09%	23%	47.5 +
Missouri	**	2	00% *	15% *	48.4 +
Montana	*	1	05%	14% *	54.6 +
Nebraska	**	2	08%	26%	53.2 +
Nevada	**	2	07%	37%	58.1 +
New Hampshire	*	1	05%	—	54.2 -
New Jersey	**	2	00% *	34%	52.8 =
New Mexico	*	1	08%	47%	49.2 -
New York	*	1	05%	34%	51.1 +
North Carolina	****	4	03%	24%	52.0 -
North Dakota	**	2	00% *	21%	56.0 -
Ohio	****	4	00% *	17% *	53.5 +
Oklahoma	***	3	03%	34%	50.3 -
Oregon	****	4	02% *	33%	52.0 -
Pennsylvania	***	3	00% *	14% *	53.2 +
Rhode Island	***	3	00% *	—	65.2 + *
South Carolina	*	1	14%	29%	53.2 -
South Dakota	*	1	03%	20%	55.5 -
Tennessee	***	3	00% *	28%	49.2 -
Texas		0	12%	30%	52.0 +
Utah	*	1	10%	44%	54.0 =
Vermont	**	2	00% *	—	49.3 -
Virginia		0	15%	34%	54.7 +
Washington	***	3	01% *	46%	51.3 -
West Virginia	**	2	10%	16% *	54.6 =
Wisconsin	****	4	00% *	17% *	53.5 -
Wyoming	**	2	03%	25%	51.6 +

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Attention to Teacher Education & Induction				Attention to Teaching Standards				
Professional Accreditation[4] % of NCATE accredited programs (* @ 80% or more)	Student Teaching[5] # of required weeks (* @ 12 weeks or more)	Student Teaching[6] Experience with diverse learners (* with yes)	New Teacher Induction[7] State-required and funded (* with yes)	Professional Standards Board[8] (* with yes)	Nationally Certified Teachers[9] (*with 20 or more)	Incentives for National Board Certification[10] Link to Licensing (* with at least two types of incentives)	Incentives for National Board Certification[10] Support for Professional Development	Incentives for National Board Certification[10] Financial Rewards
60%	10	no	no		7	no	yes	no
20%	12*	no	no		3	no	no	no
0%	10*	no	no			yes	no	no
100%*	12*	yes*	no			yes	no	no
18%	15*	yes*	partial	yes *	56*	no	no	no
41%	—	yes*	pending		18	yes	yes	no *
13%	10	no	yes*		11	no	no	no
25%	09	no	proposed			no	no	no
71%	09	yes*	yes*			no	no	no
43%	12*	no	partial		5	no	no	no
53%	10	yes*	yes*	yes *	8	yes	yes	yes *
00%	09	no	no	yes *		no	no	no
83%*	10*	no	no		2	no	no	no
30%	08	yes*	no		5	no	yes	no
84%*	10	no	yes*	yes *	5	no	no	no
23%	12*	no	no	yes *	10	yes	yes	no *
55%	10	no	piloting		11	no	no	no
42%	12*	no	yes*	yes *	1	yes	no	yes *
60%	06*	no	yes*		5	no	no	no
23%	15*	yes*	no		2	no	no	no
14%	08*	no	no			yes	yes	no *
19%	06*	yes*	no			no	yes	no
48%	08*	yes*	partial		54*	yes	yes	no *
84%*	08*	yes*	yes*	yes *	14	no	no	no
67%	00	no	no		4	no	yes	yes *
50%	00	no	partial			no	no	no
38%	10*	no	proposed			yes	no	no
87%*	14*	no	no		1	no	no	no
100%*	08	no	no	yes *		no	no	no
38%	—	yes*	no			no	no	no
36%	16*	no	no		8	no	no	no
38%	06*	no	no		22*	yes	no	no
05%	—	no	no		24*	no	no	no
96%*	10	yes*	proposed		65*	yes	yes	yes *
70%	10	no	no	yes *		no	no	no
40%	10	yes*	proposed		6	yes	yes	yes *
81%*	12*	no	no			yes	no	yes *
36%	15*	yes*	no	yes *		no	no	no
20%	12*	no	no		2	no	no	no
25%	10*	yes*	no		1	yes	no	no
21%	12*	no	no		8	no	no	no
67%	10	yes*	no			no	no	no
46%	15*	yes*	no			no	no	no
18%	10	no	partial		2	no	no	no
83%*	08*	no	no			no	no	no
08%	12*	no	no			no	no	no
38%	10	no	partial		6	no	yes	no
52%	08	yes*	yes*		7	no	no	no
79%	00	no	partial	yes *		no	no	no
38%	18*	yes*	no			no	no	no
100%*	—	no	no	yes *		no	no	no

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Appendix F: State-by-State Report Card Notes

1. **% of New Hires Who Are Unlicensed**—Percentage of newly hired teachers not certified in main assignment field. (Source: U.S. Depatrment of Education, National Center for Education Statistics, *1990-91 Schools and Staffing Survey*, Unpublished tabulations, National Data Resource Center)

2. **% of Math Teachers Without At Least a Subject Matter Minor**—The percentage of public school teachers who taught one or more classes in mathematics without at least a minor in the field. (Source: U.S. Department of Education, National Center for Education Statistics, *1990-91 Schools and Staffing Survey*; Richard P. Ingersoll, *Schools and Staffing Survey: Teacher Supply, Teacher Qualifications, and Teacher Turnover, 1990*)

3. **Teachers as a Percent of Staff**—Percentage of staff who are teachers, fall 1994. NOTE: Other support staff—e.g., bus drivers, maintenance, and food service—are included. (Source: U.S. Department of Education, National Center for Education Statistics, *Statistics in Brief—Public School Student, Staff, and Graduate Counts by State, School Year 1994-95*, May 1996)

4. **Professional Accreditation**—The percentage of teacher education institutions that are accredited by NCATE (National Council for the Accreditation of Teacher Education). (Source: National Council for the Accreditation of Teacher Education, June 1996)

5. **Required Number of Weeks of Full-Time Student Teaching**—Number of weeks of student teaching required by the state. An (e) indicates an estimate based on required clock or college semester credit hours. May vary by grade level. (Source: National Association of State Directors of Teacher Education and Certification: Manual on Certification and Preparation of Educational Personnel in the United States and Canada, 1996-97)

6. **Student Teaching Experience Includes Teaching Special Needs Students in Diverse Settings**—Whether or not a state requires that the student teaching experience include work with diverse learners who are either special/exceptional students or in a multicultural setting. (Source: National Association of State Directors of Teacher Education and Certification, *Manual on Certification and Preparation of Educational Personnel in the United States and Canada, 1996-97*)

7. **New Teacher Induction or Mentoring Programs**—Indicates whether or not a state requires that new teachers participate in a formal induction or mentoring program that is state-funded with state or district training for mentors. (Developed from current survey of state-by-state professional development policies and practices. The Consortium for Policy Research in Education, University of Pennsylvania - July 1996)

8. **Professional Standards Boards**—Whether or not a state has established an independent professional teacher standards boards to set standards for teacher education and licensing. (Source: National Council for Accreditation of Teacher Education, 1995)

9. **Nationally Certified Teachers**—Number of National Board-Certified teachers by state. (Source: National Board for Professional Teaching Standards, Detroit, Michigan, July 1996)

10. **Incentives for NBPTS Certification**—Whether or not state policy has been established to (1) link National Board Certification to licensing (e.g., portability, license renewal, or advanced certification status); (2) support participation in National Board assessments as a prominent form of professional development; and (3) financially reward National Board-Certified teachers. (Source: National Board for Professional Teaching Standards, Detroit, Michigan, July 1996)

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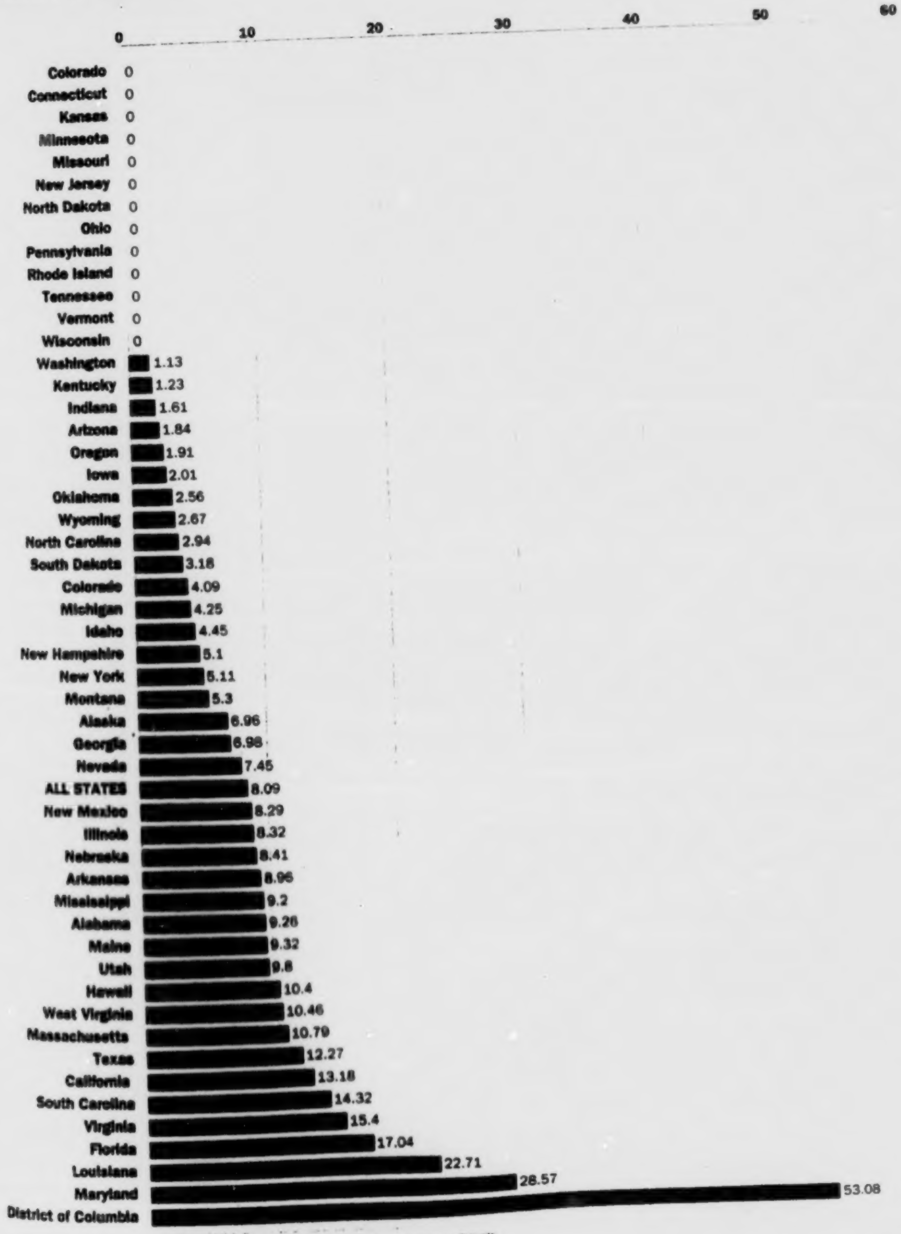
Appendix F: Percentage of Newly Hired Unlicensed Teachers, by State, 1990-91



Source: U.S. Department, National Center for Education Statistics, Schools and Staffing Survey, 1990-91.

Appendix F: Percentage of Public High School Teachers Who Taught One or More Classes in a Field Without at Least a Minor in that Field, by Field and State: 1990-91

	Math	Science	Social Studies	English	Foreign Lang.	Voc. Ed.	Art/Music	Phys. Ed.
Total Public	30.5	16.9	16.9	21.9	15.4	19.0	15.4	14.6
Alabama	21.2	18.6	22.2	22.6	—	20.1	22.1	7.2
Alaska	63.3	22.3	34.9	27.7	—	38.1	—	48.5
Arizona	30.7	17.8	21.0	21.2	—	14.9	26.2	21.5
Arkansas	20.2	14.6	25.3	21.9	—	11.6	6.6	8.9
California	51.0	18.2	16.2	29.0	22.5	27.5	20.1	33.3
Colorado	35.1	18.4	21.6	20.8	13.2	15.8	14.2	10.3
Connecticut	11.1	4.6	14.7	13.0	0.0	27.4	—	—
Delaware	—	—	—	—	—	—	—	—
District of Columbia	—	—	—	—	—	—	—	—
Florida	38.8	29.6	20.7	16.6	—	30.7	26.5	10.9
Georgia	35.0	21.7	19.6	21.4	22.0	22.3	—	22.6
Hawaii	50.6	—	—	—	—	—	—	—
Idaho	24.5	9.7	18.3	19.1	—	14.3	26.2	11.7
Illinois	27.5	16.8	20.1	26.0	8.0	16.2	8.5	5.9
Indiana	29.7	15.3	5.5	12.9	24.0	13.1	9.4	8.3
Iowa	18.0	21.6	8.8	16.5	17.7	6.2	12.7	16.7
Kansas	13.0	17.7	25.6	24.0	—	8.5	6.4	8.3
Kentucky	17.4	19.8	11.2	19.2	—	8.3	15.4	—
Louisiana	30.9	24.2	19.8	23.8	—	12.4	—	17.3
Maine	32.9	19.8	15.2	27.4	—	21.8	24.0	—
Maryland	39.6	22.6	19.0	29.7	—	28.2	—	—
Massachusetts	36.8	16.7	14.3	15.9	10.5	44.2	—	—
Michigan	32.8	22.1	20.0	25.3	—	13.9	16.6	14.6
Minnesota	14.2	8.3	14.1	7.1	9.5	6.9	9.4	9.6
Mississippi	22.8	9.2	12.8	20.4	—	23.9	8.6	15.5
Missouri	14.9	22.9	13.8	19.6	22.3	15.3	15.0	18.9
Montana	13.6	21.7	12.9	15.8	20.7	12.1	16.2	7.1
Nebraska	26.2	10.8	22.3	20.7	—	6.7	14.1	19.1
Nevada	37.3	—	20.9	25.3	—	23.4	—	—
New Hampshire	—	—	—	2.1	—	—	—	—
New Jersey	33.6	19.7	15.3	25.0	9.3	20.6	17.3	8.9
New Mexico	47.1	43.9	19.6	41.0	—	13.7	—	16.7
New York	33.5	12.5	12.9	23.6	8.5	19.9	16.1	3.6
North Carolina	23.7	8.1	18.0	24.2	—	19.2	18.1	10.3
North Dakota	21.2	7.8	13.7	7.6	19.4	7.9	7.0	9.6
Ohio	17.1	9.8	13.3	15.6	—	23.8	8.8	—
Oklahoma	34.2	23.9	24.8	21.7	24.5	5.9	18.2	23.0
Oregon	33.4	11.0	26.9	28.8	—	13.6	24.8	18.5
Pennsylvania	14.4	9.6	11.6	19.8	9.8	18.6	11.5	2.9
Rhode Island	—	—	—	—	—	—	—	—
South Carolina	28.7	22.0	13.5	13.0	—	27.2	11.3	19.7
South Dakota	19.7	13.9	24.6	27.7	15.8	10.8	12.5	20.8
Tennessee	27.8	26.4	26.8	27.0	15.6	24.2	21.0	16.5
Texas	30.4	13.9	16.3	18.2	26.4	23.6	18.1	12.2
Utah	43.7	11.7	22.4	24.8	19.5	16.3	26.3	12.5
Vermont	—	—	—	12.9	—	—	—	—
Virginia	34.0	14.0	13.9	16.7	2.2	11.2	10.1	—
Washington	46.0	24.3	17.6	28.9	9.7	23.2	29.1	33.3
West Virginia	16.0	17.1	32.2	32.9	—	13.0	16.6	6.1
Wisconsin	16.5	16.5	4.9	18.2	—	10.3	7.8	2.4
Wyoming	24.9	8.3	27.8	16.7	—	9.1	20.0	4.5

— Too few cases for reliable estimate

Source: U.S. Department of Education, National Center for Education Statistics, 1990-91 Schools and Staffing Survey (Teacher and School Questionnaires).

From: Richard M. Ingersoll, *Schools and Staffing Survey: Teacher Supply, Teacher Qualifications, and Teacher Turnover, 1990-91* (U.S. Department of Education, Washington, D.C.: National Center for Education Statistics, 1995), p. 28.

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Appendix F: Minimum and Average Teacher Salaries, by State: 1993-94

	Minimum (beginning) salary	Average salary
United States	$23,258	$35,813
Alabama	22,500	28,659
Alaska	31,800	47,902
Arizona	21,825	31,825
Arkansas	19,694	28,312
California	25,500	40,636
Colorado	20,091	33,826
Connecticut	28,052	50,389
Delaware	22,795	37,469
District of Columbia	25,825	43,014
Florida	23,171	31,944
Georgia	21,885	29,214
Hawaii	25,100	36,564
Idaho	18,700	27,756
Illinois	25,171	39,416
Indiana	22,021	35,741
Iowa	20,709	30,760
Kansas	22,624	31,700
Kentucky	21,257	31,639
Louisiana	18,195	26,243
Maine	19,840	30,996
Maryland	24,703	39,475
Massachusetts	23,000	38,960
Michigan	24,400	45,218
Minnesota	23,408	36,146
Mississippi	18,833	25,153
Missouri	21,078	30,324
Montana	18,750	28,200
Nebraska	20,804	29,564
Nevada	24,155	37,181
New Hampshire	22,400	34,121
New Jersey	29,346	45,582
New Mexico	22,057	27,922
New York	26,903	45,772
North Carolina	20,002	29,727
North Dakota	17,453	25,506
Ohio	19,553	35,912
Oklahoma	22,181	27,612
Oregon	23,186	37,589
Pennsylvania	28,231	42,411
Rhode Island	23,365	39,261
South Carolina	20,533	29,414
South Dakota	18,935	25,259
Tennessee	19,625	30,514
Texas	21,806	30,519
Utah	18,787	28,056
Vermont	22,982	34,517
Virginia	23,273	33,472
Washington	23,183	35,860
West Virginia	21,450	30,549
Wisconsin	23,677	36,644
Wyoming	20,416	30,954

Source: American Federation of Teachers, *Survey and Analysis of Salary Trends, 1991, 1993 and 1994*.
Published in *Digest of Education Satistics 1995* (Washington, D.C.: National Center for Education Statistics, 1995), Table 78, p. 86.

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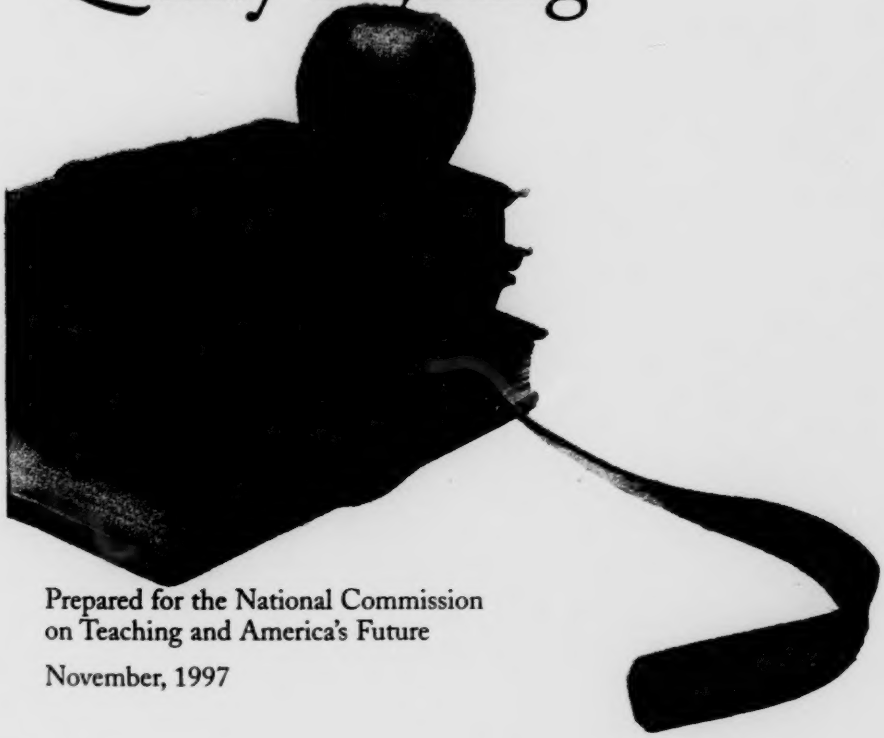
APPENDIX N- Report of the National Commission on Teaching & America's Future- "Doing What Matters Most: Investigating in Quality Teaching"

Doing What Matters Most: Investing in Quality Teaching



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The Commission was created to identify the implications for teaching embodied in current school reforms; to examine what steps need to be taken to guarantee all children access to skilled, knowledgeable, and committed teachers; and to develop a comprehensive blueprint for recruiting, preparing, and supporting a teaching force that can meet 21st-century standards of high educational performance. The Commission's report, ***What Matters Most: Teaching for America's Future***, was released in September 1996.

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Doing What Matters Most: Investing in Quality Teaching

Prepared for the National Commission
on Teaching and America's Future

by Linda Darling-Hammond
Executive Director

November, 1997

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Preface and Acknowledgments

One year ago the National Commission on Teaching and America's Future issued its report, *What Matters Most: Teaching for America's Future*. Like most reports of its kind, this one was launched at a press conference which received substantial attention from the media. Since then, however, the report has not been abandoned to a dusty shelf. Much more has occurred. A group of states have joined forces to seek to implement the report's recommendations. National organizations of policymakers and practitioners, having endorsed the report, are working with their members on strategies to improve teaching standards and teacher professional development. Commissions on teaching have been formed in many communities, and steps are underway to change policies, programs, and practices in statehouses and schoolhouses.

The National Governors' Association and the National Conference of State Legislatures have helped their members examine policy strategies to improve the quality of teaching. The National Education Association has endorsed peer review and assistance programs to improve teaching and strengthen teacher accountability. The American Federation of Teachers had worked to link student standards to teaching standards. The Council for Basic Education and the American Association of Colleges for Teacher Education have launched a project to redesign teacher education in light of student content standards. The Association for Teacher Educators has developed standards for teacher educators. Local school districts have developed initiatives to improve teacher recruitment and teaching conditions as well as teachers' access to knowledge. The American Association of School Personnel Administrators has begun studies of effective teacher recruitment and personnel practices. Recruiting New Teachers, the Council of the Great City Schools, the Holmes Partnership, the Teacher Union Reform Network, and the National Urban League are developing collaborative projects with the Commission to improve teacher recruitment and development in urban and poor rural school districts. And the U.S. Department of Education has launched two major research centers to study how to enhance teaching excellence.

This follow-up report, *Doing What Matters Most: Investing in Quality Teaching*, seeks to gauge the nation's progress toward the goal of high-quality teaching in every classroom in every community. It draws on data about the conditions of teaching that have become available since the original Commission report was released, and it examines policy changes that have occurred.

The research presented here is the product of many people's efforts. Deborah Ball co-authored portions of this text. Ronald Ferguson of the Harvard Kennedy School graciously provided detailed information about his analyses of student achievement. Richard Ingersoll conducted extensive analyses of the U.S. Depart-

ment of Education's Schools and Staffing Surveys. Barnett Berry collected and analyzed data on state policies and practices. Dylan Johnson of the Commission's staff and Craig Jerald, Bridget Curran, Nancy Waymack, Karen Abercrombie, Kimberley Campbell, and Rachel Henighan of Education Week assisted in data collection. Eric Hirsch of the National Conference of State Legislatures assembled data on state legislation related to teaching. Marilyn Rauth, Ellalinda Rustique-Forrester, and Jon Snyder contributed to data analyses and writing. Stephen Broughman and Kerry Gruber of the National Center on Education Statistics ferreted out NCES data and answered critical questions. Flynn Marie Pritchard designed a panoply of tables and graphics. Deanna Knickerbocker of the Center for Advanced Study in the Behavioral Sciences developed additional beautiful graphics. Andy Bornstein designed the report with great speed and skill. Matthew Forrester designed the appendices. Margaret Garigan and Connie Simon assisted in assembling portions of the report.

The Rockefeller Foundation and Carnegie Corporation of New York have continued to provide major financial support for ongoing implementation of the Commission's work. The Ford Foundation has provided funds for an intensive nationwide effort to improve teaching in urban and poor rural schools. The U.S. Department of Education's National Institute on Educational Governance, Finance, Policymaking and Management has supported research and networking among the Commission's partner states. The AT&T Foundation supported the Commission's website and videotape. Support for specific state and regional efforts has been provided by the BellSouth Foundation, the Georgia Power Company, the John D. and Catherine T. MacArthur Foundation, the Pew Charitable Trust, the Philip Morris Companies Inc., and the William R. Kenan Jr. Charitable Trust.

All of these organizations and individuals have made important contributions to this work. The most important contributions, however, were and will be made by the teachers, parents, students, and community leaders and policy makers who are doing what matters most: working with each other to improve teaching and learning.

Doing What Matters Most: Investing in Quality Teaching

"We propose an audacious goal.... By the year 2006, America will provide every student with what should be his or her educational birthright: access to competent, caring and qualified teaching."
—*What Matters Most: Teaching for America's Future*[1]

With these words, the National Commission on Teaching and America's Future summarized its challenge to the American public in September, 1996. The Commission sounded a clarion call to place the issue of teaching quality squarely at the center of our nation's education reform agenda, arguing that without a sustained commitment to teachers' learning and school redesign, the goal of dramatically enhancing school performance for all of America's children will remain unfulfilled.

Following two years of intense study and discussion, this blue-ribbon panel of education, community, and business leaders concluded that an impasse has been reached in school reform: Most schools and teachers cannot achieve the goals set forth in new educational standards, not because they are unwilling, but because they do not know how, and the systems they work in do not support them in doing so. The Commission's report offered a blueprint for transforming how teachers and principals are prepared, recruited, selected, and inducted, and how schools support, assess, and reward their work.

The publication of the Commission's report marked the tenth anniversary of a set of reports that first drew the nation's attention to the importance of teachers and teaching, including the Carnegie Forum's *A Nation Prepared: Teachers for the 21st Century* and the Holmes Group's *Tomorrow's Teachers*. The Commission's recommendations built upon these prior reform efforts, highlighted initiatives that work, and described how these can become building blocks for a comprehensive system that supports high quality teaching.

Since that time, the report and the Commission's subsequent work have stimulated dozens of pieces of federal and state legislation, a wide array of local initiatives to improve teaching, more than 1500 news articles and editorials nationally and abroad, and at least two federally-funded research and development initiatives which bring together researchers, professional associations, policy makers, and practitioners to enhance knowledge and practice in the fields of teaching and policy.[2]

Twelve states are working with the support of the Commission and the participation of their governors, state education departments, legislative leaders, and business and education leaders to develop strategies for improving the quality of teaching. They include: Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Missouri, Montana, North Carolina, Ohio, and Oklahoma. Several others will join this group of partner states in the coming year.

This report revisits the Commission's recommendations, offers new data about how investments in teaching influence student achievement, and provides an overview of the nation's progress toward quality teaching.

The Commission's Findings

In *What Matters Most: Teaching and America's Future*, the Commission described aspects of teaching in the United States that had barely been known to the public. While teachers' knowledge and skills powerfully influence student learning, the United States has no real system in place to ensure that teachers get access to the kinds of knowledge they need to help their students succeed. At the same time, demand for new teachers is escalating—more than two million teachers will need to be hired over the next decade—so the nation's ability to place highly-qualified teachers in all classrooms will depend on proactive policies that increase both the quantity and quality of teachers.

The Commission revealed that more than one-quarter of newly hired public school teachers in 1991 lacked the qualifications for their jobs, and nearly one-fourth (23%) of all secondary teachers did not have even a minor in their main teaching field. Fifty-six percent of high school students taking physical science were being taught by out-of-field teachers, as were 27% of those taking mathematics and 21% of those taking English. The least qualified teachers were most likely to be found in high-poverty and predominantly minority schools and in lower-track classes. In fact, in schools with the highest minority enrollments, students had less than a 50% chance of getting a science or mathematics teacher who held a license and a degree in the field he or she taught.

At the same time, the Commission's analysis revealed that many states' and districts' licensing and hiring practices are out of synch with new student standards and with the expanding diversity of students entering our schools. Furthermore, the nation lacks systems to attract and retain the kinds of teachers needed for high demand fields and locations. Rather than creating policies to address shortages, standards are too often waived or lowered to admit people without qualifications to teach. Much preservice teacher education is thin and fragmented; standards for schools of education are unevenly applied; many beginning teachers receive little or no mentoring; and teacher evaluation and reward systems are disconnected from the nation's education goals.

In addition, professional development investments are fairly paltry, and most districts' offerings, limited to "hit and run" workshops, do not help teachers learn the sophisticated teaching strategies they need to address very challenging learning goals with very diverse populations of students. Most school districts do not direct their professional development dollars in a coherent way toward sustained, practically useful learning opportunities for teachers. And teachers have little time to learn from one another: In U.S. schools, most teachers have only 3 to 5 hours a week in which to prepare their lessons, usually in isolation from their colleagues. They rarely have opportunities to plan or collaborate with other teachers, to observe and study teaching, or to talk together about how to improve curriculum and meet the needs of students. In short, many U.S. teachers enter the profession with inadequate preparation, and few have many opportunities to enhance their knowledge and skills over the course of their careers.

By contrast, most nations we might consider peers or competitors hire far more teachers, prepare them more extensively, pay them more in relation to competing professional occupations, give them broader decision-making responsibility, and provide them with many more hours each week for joint planning and professional development. Many European and Asian countries support high-quality teaching by:

- pegging teachers' salaries to those of professionals like engineers or civil servants to avoid shortages of qualified personnel;
- subsidizing teacher preparation so that talented candidates can be recruited and offered a rigorous program of studies;

- requiring or encouraging graduate-level preparation in education on top of a bachelor's degree with one or more disciplinary majors;
- ensuring a year-long internship under the guidance of master teachers, in a school that works closely with the university teacher education program;
- requiring examinations of subject matter and teaching knowledge before entry into the profession;
- building extensive time for learning and collaborative planning into teachers' schedules so that they can work on teaching together.

In countries like Japan and China, teachers routinely work with their colleagues on developing curriculum, polishing lessons, observing each other's teaching, participating in study groups, and conducting research on teaching. In many countries, these activities are organized around a state or national curriculum framework, which is typically a lean instrument that outlines a relatively small number of major concepts and ideas to be treated, leaving to teachers the job of figuring out strategies for doing so that will work for their own students. (It is worth noting that U.S. texts and curriculum guides require the coverage of many more topics much more superficially than do curriculum frameworks in other countries, which emphasize in-depth learning about a smaller range of topics each year.)[3] In these countries, teachers have both a curriculum context and regular time to compare notes about particular lessons and problems, conduct demonstration lessons for one another, discuss how their students respond to specific tasks, and develop plans together.[4]

These nations are able to provide this kind of support for teachers because they allocate more of their organizational resources to teaching. In the United States, only 52% of education dollars are spent on instruction and only 43% of education staff are classroom teachers. In other industrialized nations, about three-fourths of education resources are spent directly on instruction, and classroom teachers represent from 60 to 80 percent of all staff.[5] Some restructured schools are beginning to reallocate their staff and other expenditures more directly to the classroom, with noteworthy results for student learning.[6] Resources are available in U.S. school systems to focus more effectively on quality teaching. They need to be redirected toward this end if America is to achieve its education goals.

The Commission's Recommendations

Drawing on a wide range of research findings and on examples of best practices from the U.S. and abroad, the Commission proposed a comprehensive set of recommendations that cover the entire continuum of teacher development. These proposals are intended to put the nation on a path to serious, long-term improvements in teaching and learning. They include:

I. Standards for teachers linked to standards for students. Clearly, if students are to achieve high standards, we can expect no less from their teachers and other educators. The first priority is reaching agreement on what teachers should know and be able to do in order to help students succeed at meeting the new standards. This task has recently been undertaken by three professional bodies that set standards for teacher education (the National Council for Accreditation of Teacher Education), beginning teacher licensing (the Interstate New Teacher Assessment and Support Consortium), and the advanced certification of accomplished veteran teachers (the National Board for Professional Teaching Standards). Their combined efforts to set standards for teaching linked to new student standards outline a coherent continuum of teacher development throughout the career. (See Appendix C for a summary of the standards.) To advance these standards, the Commission recommends that states:

- Establish professional standards boards.
- Insist on professional accreditation for all schools of education.
- License teachers based on demonstrated performance of ability to teach to the new standards, including tests of subject matter knowledge, teaching knowledge, and teaching skill.
- Use National Board standards as the benchmark for accomplished teaching.

II. Reinvent teacher preparation and professional development. For teachers to have continuous access to the latest knowledge about teaching and learning, the Commission recommends that states, schools, and colleges:

- Organize teacher education and professional development around standards for students and teachers.
- Institute extended, graduate-level teacher preparation programs that provide yearlong internships in a professional development school.
- Create and fund mentoring programs for beginning teachers that provide support and assess teaching skills.
- Create stable, high-quality sources of professional development; then allocate one percent of state and local spending to support them, along with additional matching funds to school districts.
- Embed professional development in teachers' daily work through joint planning, study groups, peer coaching, and research.

III. Overhaul teacher recruitment and put qualified teachers in every classroom. To address teacher recruitment problems, the Commission urged states and districts to:

- Increase the ability of financially disadvantaged districts to pay for qualified teachers and insist that school districts hire only qualified teachers.
- Redesign and streamline district hiring.
- Eliminate barriers to teacher mobility, by promoting reciprocal interstate licensing and working with states to develop portable pension systems.
- Provide scholarships and forgivable loans to recruit teachers for high-need subjects and locations.
- Develop high-quality pathways into teaching for recent graduates, mid-career changers, and paraprofessionals already in the classroom.

IV. Encourage and reward knowledge and skill. Schools have few means for encouraging outstanding teaching or rewarding increases in knowledge and skill. Uncertified entrants are paid at the same levels as those who enter with highly developed skills. Novices take on exactly the same kind of work as 30-year veterans. Mediocre teachers receive the same rewards as outstanding ones. Teachers must leave the classroom to get promoted. To address these issues, the Commission recommends that states and districts:

- Develop a career continuum and compensation systems that reward knowledge and skill.
- Enact incentives for National Board Certification.
- Remove incompetent teachers through peer assistance and review programs that provide necessary supports and due process.

V. Create schools that are organized for student and teacher success. In order to be able to direct their energies around a common purpose, schools need to adopt shared standards for student learning that become the basis for common efforts of teachers, parents, and the community. Then, schools must be freed of the tyrannies of time and tradition to permit more powerful student and teacher learning. This includes restructuring time and staffing so that teachers have regular time to work with one another and with shared groups of students; rethinking schedules so that students and teachers have more extended time together over the course of the day, week, and years; and reducing barriers to the involvement of parents so that families and schools can work together. To accomplish this, the Commission recommends that state and local boards work to:

- Reallocate resources to invest more in teachers and technology and less in non-teaching personnel.
- Select, prepare, and retain principals who understand teaching and learning and who can lead high-performing schools.
- Rethink schedules and staffing so that students have more time for in-depth learning and teachers have time to work with and learn from one another.

More recent evidence suggests that these recommendations are as germane today as they were a year ago, and ever more pressing if the United States is going to accomplish its goals for education.

America's Agenda for Education

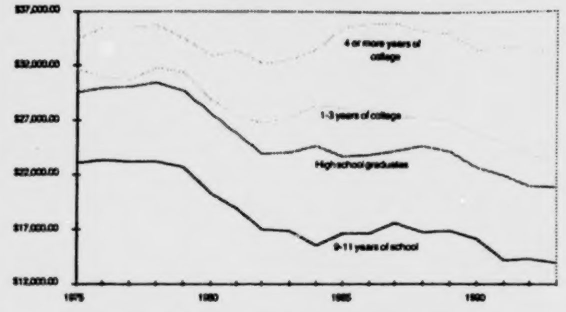
New Standards and New Students

The education reform movement in the United States has focused increasingly on the development of new standards for students: Virtually all states have begun the process of creating more academically challenging standards for graduation, new curriculum frameworks to guide instruction, and new assessments to test students' knowledge. President Clinton has proposed a new national test, and many school districts across the country are weighing in with their own versions of standards-based reform, including new curricula, testing systems, accountability mechanisms, and promotion or graduation requirements.

These efforts are stimulated by growing evidence that students will not succeed in meeting the demands of a knowledge-based society and economy if they do not encounter and master much more challenging work in school. By the first decade of the 21st century, nearly 50% of all jobs will require the higher levels of knowledge and skill once reserved for the education of the few. Only about 10% of jobs will offer the kind of routine work factories once provided for low-skilled workers, and these will pay far less than what such jobs offered only 20 years ago.[7] As figure 1 shows, only college-educated workers have come close to holding their own economically over the last two decades, while those with a high school education or less have steadily lost real income as previously well-paid factory jobs have become automated or moved overseas. Even among individuals with the same degrees, those with higher levels of skill increasingly have greater earning capacity. Surveys of employers indicate that even entry-level jobs require workers who have mastered higher levels of basic skills, are technologically literate, and can plan and monitor much of their own work.[8]

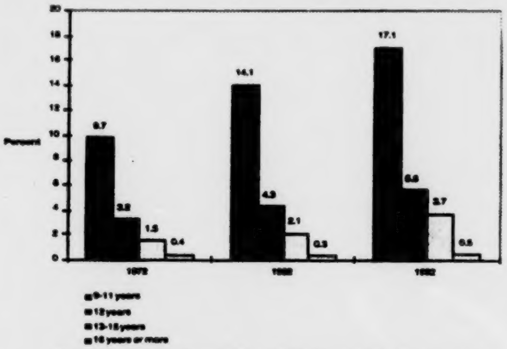
Figure 1
Trends in Wages, 1975-1993

(Median earnings of male wage and salary workers 25 to 34 years old, in 1994 constant dollars)



Source: National Center for Education Statistics, The Condition of Education, 1995, pp.292-294.

Figure 2
Education and Welfare Dependency
(Percent of 25-34 year olds receiving AFDC or public assistance, by years of schooling completed)



Source: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys. Published in NCES, The Condition of Education, 1995, p. 96.

Many workers have great difficulty moving into the more intellectually and interpersonally demanding jobs the new economy has to offer. As Peter Drucker notes:

> The great majority of the new jobs require qualifications the industrial worker does not possess and is poorly equipped to acquire. They require a good deal of formal education and the ability to acquire and to apply theoretical and analytical knowledge. They require a different approach to work and a different mind-set. Above all, they require a habit of continuous learning. Displaced industrial workers thus cannot simply move into knowledge work or services the way displaced farmers and domestic workers moved into industrial work.[9]

More than ever before in our nation's history, education is the ticket not only to economic success but to basic survival. Because the economy can no longer absorb many unskilled workers at decent wages, lack of education is increasingly linked to crime and welfare dependency. Women who have not finished high school are much more likely than others to be on welfare (figure 2), while men who have not succeeded educationally are much more likely to be incarcerated. Most inmates have literacy skills below those required by the labor market,[10] and nearly 40 percent of juvenile delinquents have learning disabilities that went untreated in school.[11]

National investments in the last decade have tipped heavily toward imprisonment rather than education. During the 1980s, prison populations more than doubled while expenditures for prosecution and corrections grew by over 900 percent.[12] During the same decade, per pupil expenditures for schools grew by only about 26% in real dollar terms.[13]

Meanwhile, schools have changed slowly. Most are still organized to prepare only about 20% of their students for "thinking work"—those students who are tracked very early into gifted and talented, "advanced," or honors courses. And most teachers have had little opportunity to learn to teach in the way new aca-

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demic standards and a much more diverse student body demand. As the National Commission described in its report, a large proportion of teachers do not have adequate background in the fields they are asked to teach or sufficient skills for the students they need to reach.

More recent data suggest that the picture has improved little in the first half of this decade. In 1994, 21% of all public secondary teachers had less than a minor in their main assignment field, and 59% had less than a minor in their secondary teaching field.[14] More than 20% of public school teachers hired that year—and 27% of new entrants to teaching—had not met the requirements to enter teaching and were practicing with a substandard license in their main field or none at all.[15] And, even among those with preparation to teach, relatively few are well-prepared for the students they meet in today's classrooms, especially if they completed their training many years ago.

The American classroom requires teachers with high levels of knowledge and a broad range of skills. In 1996, for example, about 11% of U.S. students were identified as disabled,[16] and the vast majority of them (73%) were served in regular classrooms.[17] However, few teachers have had any opportunity to learn how to teach students with disabilities. At the same time, about 5% of American students were identified as limited English proficient,[18] yet just one-fourth of the teachers serving these children had received any training in strategies for teaching new English language learners.[19] In addition to these specific needs, more than one-third of students in the average classroom will be members of racial/ethnic minority groups or recent immigrants from a wide variety of cultures; more than one-fourth will live in households below the poverty line; and more than half will live in families that have experienced divorce, absence, or death of at least one parent.

Thus, in a typical classroom of 25 students, today's teacher will serve at least 4 or 5 students with specific educational needs that she has not been prepared to meet. In addition, she will need considerable knowledge to develop curriculum and teaching strategies that address the wide range of learning approaches, experiences, and prior levels of knowledge the other students bring with them as well. And she will need to know how to help these students acquire much more complex skills and types of knowledge than ever before.

Why Teaching Matters

For many decades, the United States education system has tried to improve student achievement by tinkering with various levers in the great machinery of schooling: New course requirements, curriculum packages, testing policies, management schemes, centralization initiatives, decentralization initiatives, and a wide array of regulations and special programs have been tried, all with the same effect. Reforms, we have learned over and over again, are rendered effective or ineffective by the knowledge, skills, and commitments of those in schools. Without know-how and buy-in, innovations do not succeed. Neither can they succeed without appropriate supports, including such resources as high-quality curriculum guidance and materials, time, and opportunities to learn.

Over the last decade, reforms have sought to increase the amount of academic coursework and the numbers of tests students take, in hopes of improving achievement. These initiatives have made a great difference in coursetaking: In 1983, only 14% of high school students took the number of academic courses recommended in *A Nation at Risk*—4 units in English and 3 each in mathematics, science, and social studies. By 1994, more than half (51%) had taken this set of recommended courses.

Despite these changes, achievement scores have improved little, and have actually declined slightly for high school students in reading and writing since 1988 (see figure 3). Meanwhile, the proportion of higher education institutions offering remedial courses has increased, reaching 78% in 1995.[20] While the courses were taught, the overall quality of learning seems not to have improved. Clearly, the quality of teaching students receive must be as much a focus of attention as the number of courses they take.

Teacher expertise—what teachers know and can do—affects all the core tasks of teaching. What teachers understand about content and students shapes how judiciously they select from texts and other materials and how effectively they present material in class. Their skill in assessing their students' progress also depends on how deeply they understand learning, and how well they can interpret students' discussions and written work. No other intervention can make the difference that a knowledgeable, skillful teacher can make in the learning process. At the same time, nothing can fully compensate for weak teaching that, despite good intentions, can result from a teacher's lack of opportunity to acquire the knowledge and skill needed to help students master the curriculum.

How Teaching Matters

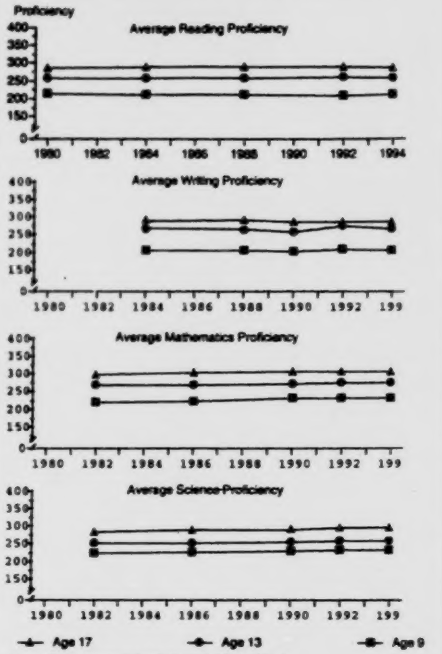
Studies discover again and again that teacher expertise is one of the most important factors in determining student achievement, followed by the smaller but generally positive influences of small schools and small class sizes. That is, teachers who know a lot about teaching and learning and who work in environments that allow them to know students well are the critical elements of successful learning.

In an analysis of 900 Texas school districts, Ronald Ferguson found that teachers' expertise—as measured by scores on a licensing examination, master's degrees, and experience—accounted for about 40% of the measured variance in students' reading and mathematics achievement at grades 1 through 11, more than any other single factor. He also found that every additional dollar spent on more highly qualified teachers netted greater increases in student achievement than did less instructionally focused uses of school resources[21] (see figure 4).

Figure 3

Trends in Student Achievement

(National Assessment of Educational Progress, scale scores)



Source: NCES, *The Condition of Education, 1997*, pp. 60-68.

The effects were so strong, and the variations in teacher expertise so great that, after controlling for socioeconomic status, the large disparities in achievement between black and white students were almost entirely accounted for by differences in the qualifications of their teachers. An additional contribution to student achievement was made by lower pupil-teacher ratios in the elementary grades. In combination, differences in teacher expertise and class sizes accounted for as much of the measured variance in achievement as did student and family background factors.

Ferguson and Helen Ladd repeated this analysis with a less extensive data set in

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Alabama that included much rougher proxies for teacher knowledge (master's degrees and ACT scores instead of teacher licensing examination scores),[22] and still found sizable influences of teacher qualifications and smaller class sizes on student achievement gains in mathematics and reading. These influences held up when the data were analyzed at both the district and school levels. In an analysis illustrating the contributions of these variables to the predicted differences between districts scoring in the top and bottom quartiles in mathematics, they found that 31% of the predicted difference was explained by teacher qualifications and class sizes, while 29.5% was explained by poverty, race, and parent education.

These findings are reinforced by those of a recent review of 60 production function studies[23] which found that teacher education, ability, and experience, along with small schools and lower teacher-pupil ratios, are associated with significant increases in student achievement. In this study's estimate of the achievement gains associated with expenditure increments, spending on teacher education swamped other variables as the most productive investment for schools (see figure 5).

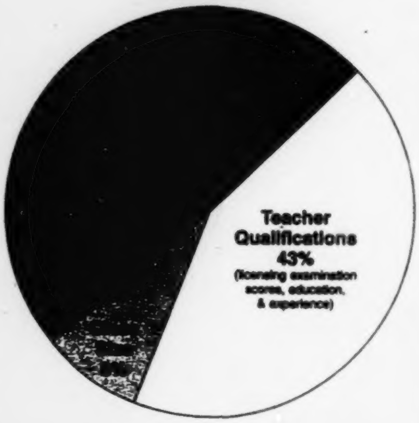
The Commission reviewed many other studies that came to similar conclusions. For example, a study of high- and low-achieving schools with similar student populations in New York City found that differences in teacher qualifications accounted for more than 90% of the variation in student achievement in reading and mathematics at all grade levels tested.[24] Research using national data and studies in Georgia, Michigan, and Virginia have found that students achieve at higher levels and are less likely to drop out when they are taught by teachers with certification in their teaching field, by those with master's degrees, and by teachers enrolled in graduate studies.[25]

A Tennessee study of the effects of teachers on student learning found that elementary school students who are assigned to ineffective teachers for three years in a row score signifi-

Figure 4

Influence of Teacher Qualifications on Student Achievement

Proportion of Explained Variance in Math Test Score Gains (from Grades 3 to 5) Due To:

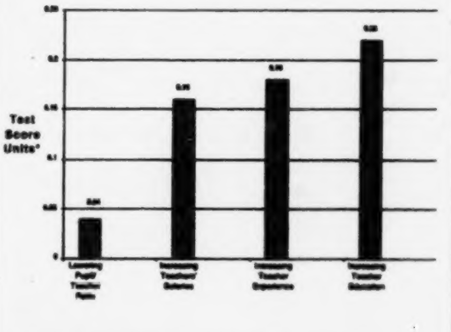


Developed from data presented in Ronald F. Ferguson, Paying for Public Education: New Evidence of How and Why Money Matters, *Harvard Journal on Legislation*. 28 (Summer 1991): pp. 465-98.

Figure 5

Effects of Educational Investments

Size of Increase in Student Achievement for Every $500 Spent on:



*Achievement gains were calculated as standard deviation units on a range of achievement tests in the 60 studies reviewed.

Source: Rob Greenwald, Larry V. Hedges, & Richard D. Laine (1996). The Effect of School Resources on Student Achievement. *Review of Educational Research* 66(3), pp. 361-396.

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cantly lower on achievement tests than those assigned to the most effective teachers over the same period of time[26] (see figure 6). This study also found troubling indicators for educational equity: African American students were almost twice as likely to be assigned to the most ineffective teachers and about half as likely to be assigned to the most effective teachers. Clearly, teachers' knowledge and skills make a difference for both educational quality and equality.

What matters for teacher effectiveness? Research confirms that teacher knowledge of subject matter, student learning and development, and teaching methods are all important elements of teacher effectiveness. Reviews of more than two hundred studies contradict the longstanding myths that "anyone can teach" and that "teachers are born and not made." This research also makes it clear that teachers need to know much more than the subject matter they teach. Teacher education, as it turns out, matters a great deal. In fields ranging from mathematics and science to early childhood, elementary, vocational, and gifted education, teachers who are fully prepared and certified in both their discipline and in education are more highly rated and are more successful with students than are teachers without preparation, and those with greater training in learning, child development, teaching methods, and curriculum are found to be more effective than those with less.[27]

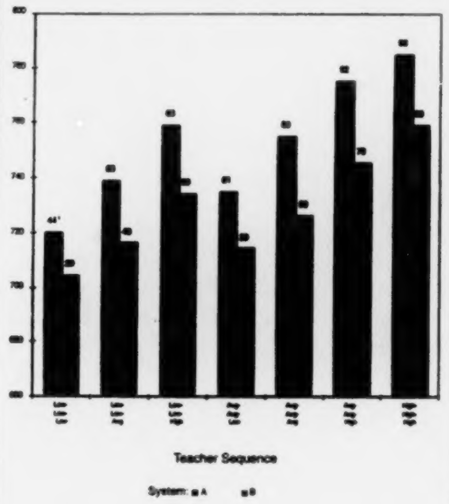
Not only does teacher education matter, but more teacher education appears to be better than less—particularly when it includes carefully planned clinical experiences that are interwoven with coursework on learning and teaching. Recent studies of redesigned teacher education programs—those that offer a five-year program including an extended internship—find their graduates are more successful and more likely to enter and remain in teaching than graduates of traditional undergraduate programs.[27]

The kind and quality of inservice education also makes a difference. A recent large-scale study by David Cohen and Heather Hill[29] found that mathematics teachers who participated in sustained professional development based on the curriculum they were learning to teach were much more likely than those who engaged in other kinds of professional development to report reform-oriented teaching practices. These practices and this professional development participation were, in turn, associated with higher mathematics achievement for students on the state assessment, after taking student characteristics and school conditions into account. The professional development which proved effective involved teachers in working directly with one another and with experts on new student curriculum materials related to specific concepts in California's mathematics framework. Teachers collaboratively studied these materials, developed and tried lessons, and discussed the results with their colleagues, raising issues of mathematics

Figure 6

Cumulative Effects of Teacher Effectiveness

Student test scores (5th grade math) by effectiveness level of teachers over a three-year period, for two metropolitan school systems



* Denotes the corresponding percentile (CTB/McGraw-Hill, 1990, pp. 104-115)

Source: W.L. Sanders and J.C. Rivers, Cumulative and Residual Effects of Teachers on Future Student Academic Achievement (Knoxville: University of Tennessee, 1996) content, instruction, and learning together.

Other studies have found similar results for intensive curriculum-based professional development. A study of student achievement on the 1993 California Learning Assessment System (CLAS) found performance higher at all grade levels when teachers had extended opportunities to learn about mathematics curriculum and instruction.[30] A study of mathematics reforms in Pittsburgh's QUASAR schools found that students achieved at higher levels where their teachers had greater opportunities to study a coherent curriculum that focused on enhancing teachers' understanding of mathematics teaching strategies *and* on their implementation of new approaches with systematic reflection on the outcomes of instruction.[31]

The National Assessment of Educational Progress has documented that the qualifications and training of students' teachers are also among the correlates of reading achievement: Students of teachers who are fully certified, who have master's degrees, and who have had professional coursework in literature-based instruction, whole language approaches, study strategies, and motivational strategies do better on reading assessments (see table 1). Furthermore, teachers who have had more professional coursework are more likely to use the literature-based and writing-based approaches to teaching reading and writing that are associated with stronger achievement. For example, teachers with more staff development hours in reading are much more likely to use a wide variety of books, newspapers, and materials from other subject areas and to engage students in regular writing, all of which are associated with higher reading achievement; they are less likely to use reading kits, basal readers, and workbooks which are associated with lower levels of reading achievement.[32]

These studies and others are gradually helping to build a foundation for professional development investments associated with productive teaching practices that can support student achievement on a wide scale.

Lessons from Last Decade's Reforms

The critical importance of investments in teaching is demonstrated by states' experiences over the past ten years. Over that decade of reform, a few states undertook major initiatives aimed at improving the quality of teaching.

Notable among them for the size and scope of investments were North Carolina and Connecticut. Both of these states coupled major statewide increases in teacher salaries with intensive recruitment efforts and initiatives to improve preservice teacher education, licensing, beginning teacher mentoring, and ongoing professional development. Since then, North Carolina has posted among the largest student achievement gains in mathematics and reading of any state in the nation, now scoring well above the national average in 4th grade reading and mathematics, although it entered the 1990s near the bottom of the state rankings. (See figures 7-9). Connecticut has also posted significant gains, becoming one of the top scoring states in the nation in mathematics and reading, despite an increase in the proportion of students with special needs during that time.[33]

North Carolina's reforms boosted minimum salaries, launched an aggressive fellowship program to recruit able students into teacher preparation by subsidizing their college education, required schools of education to become professionally accredited, invested in improvements in teacher education curriculum, created professional development academies and a North Carolina Center for the Advancement of Teaching, developed local sites to support networks like the National Writing Project, launched a beginning teacher mentoring program, and introduced the most wide-ranging set of incentives in the nation for teachers to pursue National Board Certification. North Carolina now boasts more Board-Certified

Table 1

Correlates of Reading Achievement

(Average Student Proficiency Scores, National Assessment of Education Progress, 1992)

Correlates of Reading Achievement	Lower Scores	Higher Scores
	TEACHER QUALIFICATIONS	
Level of Certification	Substandard or none 214	Highest level 219
Levels of Education	Bachelor's Degree 215	Master's degree 220
Coursework in literature-based instruction	No coursework 214	Yes coursework 218
Coursework in whole language approaches	No coursework 214	Yes coursework 218
	TEACHING PRACTICES	
Types of materials used	Primarily basal readers 214	Primarily trade books 224
Instructional Approaches	Structured Subskills 200	Integrative language 220
Emphasis on Integrative Reading and Writing	Little/no emphasis 211	Heavy emphasis 220
Emphasis on Literature-based reading	Little/no emphasis 208	Heavy emphasis 220
Frequency of use of reading workbooks and worksheets	Almost every day 214	Less than weekly 222
Frequency with which students write about what they have read	Less than weekly 214	Almost every day 221
Frequency with which teachers use reading kits to teach reading	At least once a week 211	Never or rarely 219
Frequency with which teachers take class to library	Never or rarely 209	At least once a week 219
Use of multiple choice tests to assess students in reading	At least once a week 209	Less than monthly 222
Use of short-answer tests to assess students in reading	At least once a week 214	Less than monthly 222
Using of written assignments to assess students in reading	Less than monthly 210	At least once a week 220

Source: 1992 NAEP Trial State Assessment

teachers than any other state. Recently, the state has created a professional standards board for teaching and has passed legislation that will create professional development school partnerships associated with all schools of education, develop a more intensive beginning teacher mentoring program, further upgrade licensing standards, create pay incentives for

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teachers who pursue master's degrees and Board Certification, and raise teacher salaries to the national average.

Connecticut spent over $300 million in 1986 to boost minimum beginning teacher salaries in an equalizing fashion that made it possible for low-wealth districts to compete in the market for qualified teachers. This initiative eliminated teacher shortages in the state, even in the cities, and created surpluses of teachers. At the same time, the state raised licensing standards, instituted performance-based examinations for licensing and a state-funded beginning teacher mentoring program, required teachers to earn a master's degree in education for a continuing license, invested in training for mentors, and supported new professional development strategies in universities and school districts. Recently, the state has further extended its performance-based licensing system to incorporate the new INTASC standards and to develop portfolio assessments modeled on those of the National Board for Professional Teaching Standards. Connecticut is also supporting the creation of professional development schools linked to local universities.

During the 1990s, substantial gains were also realized by states like West Virginia and Arkansas, which raised teachers' salaries and licensing standards and required accreditation of teacher education schools, and Kentucky, which funded extensive professional development in support of its curriculum and assessment reforms.

Meanwhile, there are a number of states that repeatedly lead the nation in achievement, each of which has made longstanding investments in the quality of teaching. The three long-time leaders—Minnesota, North Dakota, and Iowa—have all had a long history of professional teacher policy and are among the 12 states that have state professional standards boards which enacted high standards for enter-

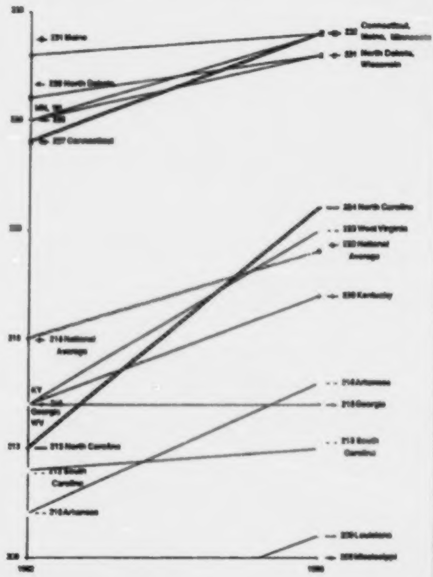

Figure 7
State Trends in Mathematics Achievement, Grade 4

Source: National Center for Education Statistics.
NAEP 1996 Mathematics Report Card for the Nation and the States, Table 2.2, p. 28.

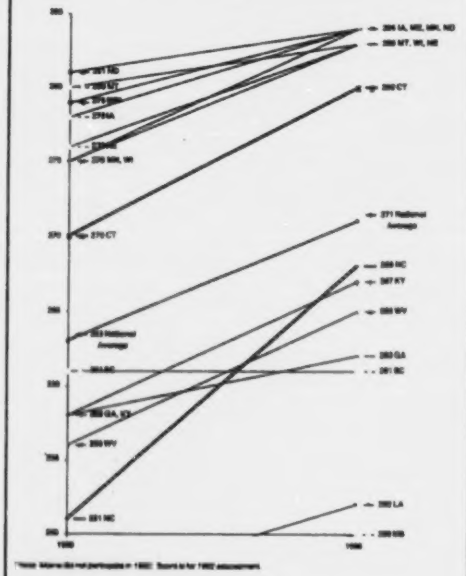

Figure 8
State Trends in Mathematics Achievement, Grade 8

Source: National Center for Education Statistics.
NAEP 1996 Mathematics Report Card for the Nation and the States, Table 2.3, p. 30.

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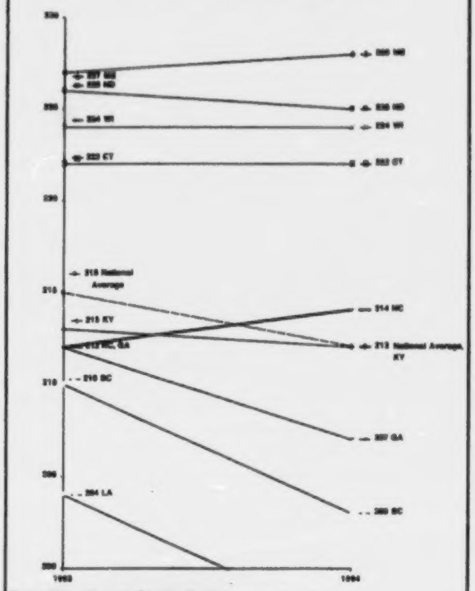
Figure 9
State Trends in Reading Achievement, Grade 4
(NAEP scores, 1992-1994)



Source: National Center for Education Statistics.
NAEP 1994 Reading Report Card for the Nation and the States, Table 2.3, p. 25.

ing teaching. Other high-scoring states like Wisconsin, Maine, and Montana have also enacted rigorous standards for teaching and are among the few that rarely hire unqualified teachers on substandard licenses (see Appendix B). Iowa, Minnesota, Montana, North Dakota, and Wisconsin have among the lowest rates of out-of-field teaching in the country and among the highest proportions of secondary teachers holding both certification and a major in the field they teach.[34] Maine joined these states in requiring certification plus a disciplinary major when it revised its licensing standards in 1988.

These states have also been leaders in redefining teacher education and licensing. Minnesota was the first state to develop performance-based standards for licensing teachers and approving schools of education during the mid-1980s, and has developed a beginning teacher residency program in the years since.[35] Wisconsin was one of the first states to require high school teachers to earn a major in their subject area in addition to extensive preparation for teaching. Thus, teacher education in Wisconsin is typically a 4½ to 5 year process. (The Wisconsin approach contrasts with that of states that reduced preparation for teaching when they required students to gain a disciplinary major at the bachelor's degree level.) Maine, Wisconsin, Iowa, and Minnesota have all incorporated the INTASC standards into their licensing standards and have encouraged universities to pilot performance-based assessments of teaching using these standards.

By contrast, state reform strategies during the 1980s that did not include substantial efforts to improve teaching have been much less successful. States that instituted new tests in the 1980s without investing in teaching did not experience improved achievement. For example, the first two states to organize their reforms around a student testing strategy were Georgia, with its Quality Basic Education Act of 1985, and South Carolina, with its Education Improvement Act of 1984. These states developed extensive testing systems attached to high stakes consequences for students, teachers, and schools. Although both states also mandated tests for teachers, they did not link these assessments to emerging knowledge about teaching or to new learning standards, nor did they invest in improving schools of education or ongoing professional development. As figures 7-9 show, student achievement in mathematics has been flat in these states while achievement in reading declined since 1990. Changes in tests and curriculum were not enough to overcome the effects of low standards for teacher education and licensing and the hiring of large numbers of uncertified teachers.[36] As described later, both states have recently undertaken major reforms of teaching that may make an important difference in the future.

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The Current Status of Teaching: Where are We Now?

The Commission's recommendations constitute a long-term agenda for American education. Later in this report we describe how many of them have been pursued in a number of states and districts. Here we discuss recent trends that characterize the current status of teaching, and suggest the kinds of continuing efforts that are needed to support improvements in the supply of teachers and the quality of teaching.

Will We Have Enough Teachers?

The nation has never before hired as many teachers in a decade as it will between now and the year 2007. The demand for teachers will continue to grow sharply as student enrollments reach their highest level ever, and teacher retirements and attrition create large numbers of vacancies. By 2007, student enrollments will grow to 54.3 million, up from about 50 million in 1995,[17] stoked by the baby "boomlet" and growing immigration rates. The size of the teaching force is projected to exceed 3.3 million by 2007, up from 2.5 million in 1982 (see figure 10).

Meanwhile, a large number of teachers are nearing retirement age. In 1994, teachers' average age was 43, up from about 40 in 1988. Fully one-fourth of all public school teachers are 50 years old or older, a sign that retirements can be expected to increase.[18] Even greater rates of retirement can be anticipated in fields like bilingual education and vocational education and in states like California, Michigan, and New Jersey which have the largest proportions of older teachers.

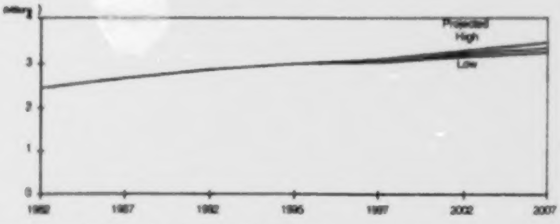
Recruitment needs to focus not only on ensuring that we have enough teachers, but also on recruiting a diverse teaching force that represents the American population if majority and minority students are to experience diverse role models. The proportion of minority teachers (about 13%) continues to be far less than the proportion of minority students (just over 33% in public schools) and far less than most school districts would like to hire. The sharp decrease in the number of college students of color choosing teaching during the 1970s and '80s, when other occupations with higher salaries became open to minorities, has been reversed in recent years, but not nearly enough to meet demand. In 1994, teachers of color comprised 15% of beginners with 1 to 3 years of experience. However, improvements in the recruitment of Native American, Asian, and Hispanic teachers were offset by continuing declines in the numbers of African American teachers entering teaching (see table 2).

Using the most conservative estimates, the nation will need to hire at least 2 million teach-

Figure 10

Demand for Elementary and Secondary Teachers

(Public and private K-12, with alternative projections: 1983 to 2007)



Source: National Center for Education Statistics. Projections of Education Statistics to 2007, [illegible] ers over the next ten years.[39] While all states and regions will experience these increases, much of the demand for teachers will occur in the South and the West, and in port cities on both coasts.

Although this level of demand is daunting, the country has for many years graduated more new teachers than it hires. In recent years, only one-third to one-half of all newly hired teachers have been new to teaching, since many districts prefer to hire experienced teachers and fill vacancies with teachers transferring from other schools or returning to the profession. Usually only about three-quarters of prospective beginners who apply for jobs get offers of employment, and only two-thirds of newly prepared teachers take full-time teaching jobs in the year after they graduate.[40] In 1993, there were over 140,000 bachelor's degree recipients who graduated with preparation for teaching (not all of whom applied to teach), and about 20,000 who prepared to teach in master's degree programs.[41] This was more than enough for the number of vacancies to be filled by beginning teachers.

Although there are many new teachers who cannot find jobs, there are also many job openings for which schools have difficulty finding teachers. For example, in 1994, more than 50% of schools with vacancies in special education, bilingual education or English as a second language, physical science, life science, or foreign languages—and more than 40% of schools with vacancies in mathematics—had difficulty filling the positions (see figure 11). In almost every field, schools with the largest numbers of low-income and minority students were much more likely than other schools to report that they had difficulty filling vacancies.[42] These schools were also much more likely than others to fill vacancies with unqualified teachers, substitutes, or teachers from other fields, or to expand class sizes or cancel course offerings when they could not find teachers (see figure 12).

These "shortages," though, are largely a problem of distribution rather than of absolute numbers. Wealthy districts that pay high salaries and offer pleasant working conditions rarely experience shortages in any field. Districts that serve low-income students tend to pay teachers less and offer larger class sizes and pupil loads, fewer materials, and less desirable teaching conditions, including less professional autonomy. For obvious reasons, they have more difficulty recruiting teachers. States that produce large numbers of teachers or have slow enrollment growth have surpluses of teachers, while those that have fewer teacher

Table 2

Teacher Characteristics

(Percentage distribution of teachers according to race-ethnicity, by years of teaching experience)

	American Indian/ Alaskan Native	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic
Total	0.7	1.1	6.7	4.1	87.3
Teaching experience					
3 or fewer years	0.9	1.6	6.0	6.8	84.7
4-9 years	0.8	1.3	5.8	5.1	86.9
10-19 years	0.7	0.9	6.4	4.0	88.1
20 or more years	0.7	1.0	8.0	2.5	87.8

Note: Percentage distributions may not sum to 100 due to rounding.

Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey: 1993-94 (Teacher Questionnaire) America's Teachers, p. 10.

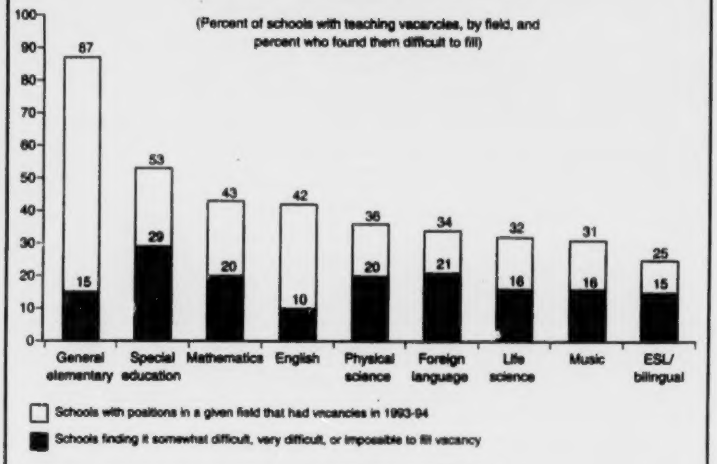
preparation programs or rapid enrollment growth must import teachers from elsewhere.

There are three major problems to be addressed. One is that few states have equalized school funding or teachers' salaries so that all districts can compete equally in the market for well-prepared teachers. States that have taken steps to raise and equalize salary levels—such as Connecticut and Kentucky—have greatly reduced shortages in central cities and rural communities.[43]

A second problem is that most states still have licensing policies which assume that labor markets for teachers are local. State standards vary widely; there is little reciprocity among states; and most states still license teachers based on their graduation from state-approved programs rather than more comparable, national standards. In many cases, neither licenses nor seniority and pensions are portable. As a consequence, teachers cannot easily get from the states that have large surpluses to those that

Figure 11

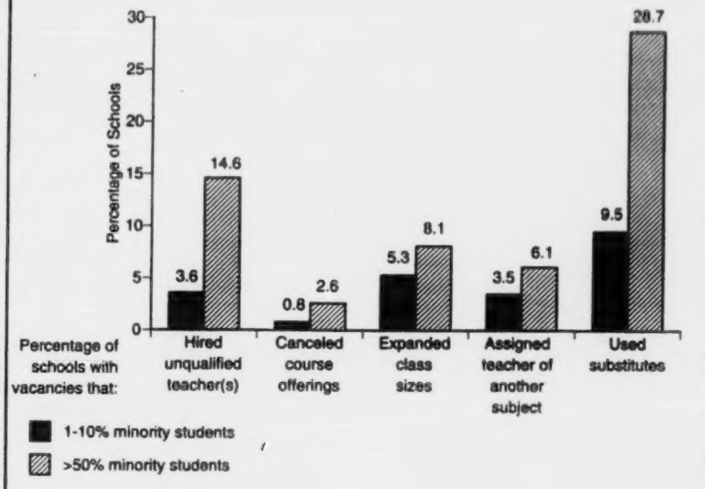
Difficulty in Filling Teaching Vacancies


(Percent of schools with teaching vacancies, by field, and percent who found them difficult to fill)

Source: NCES, America's Teachers: Profile of a Profession, 1993-94, 1997, Tables A8.11a-e.

Figure 12

Strategies for Filling Teaching Vacancies, by School Type 1993-1994



Source: NCES, *America's Teachers: Profile of a Profession, 1993-94*, 1997, Table A8.12.

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have large shortages. In the last two years, more than 20 states have taken steps that should eventually improve reciprocity by adopting common standards through the Interstate New Teacher Assessment and Support Consortium (INTASC) and beginning to develop examinations linked to these standards. At least 13 states have also adopted policies that will make it possible for teachers who have achieved National Board certification to become licensed without additional requirements if they move into a state.[44]

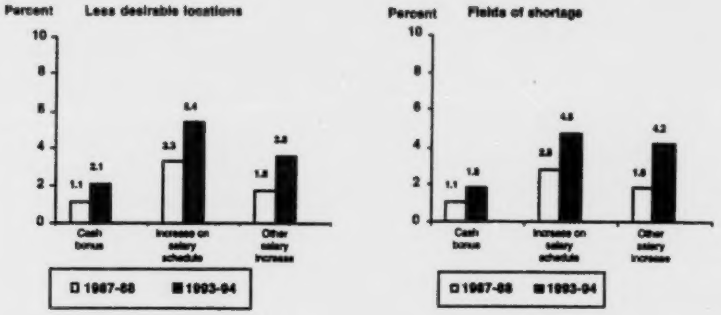
A third problem is that some large districts have had hiring procedures that are so cumbersome, dysfunctional, and untimely that they chase the best-prepared candidates away instead of aggressively recruiting them. These procedures can be changed. In *What Matters Most*, we highlighted a successful initiative in Fairfax County, Virginia to streamline and overhaul what had been a 62-step hiring process that took months to complete into a computerized, carefully managed two-week process. Other large districts have also taken steps to become proactive in recruiting well-prepared candidates. A commitment to teaching quality is the first step. Over the past two years, New York City—once a hiring source for thousands of unlicensed teachers annually—has worked to ensure qualified teachers for all of its students by streamlining hiring procedures and aggressively recruiting well-prepared teachers through partnerships with local universities. In 1997, New York filled two-thirds of its 5500 vacancies with fully qualified teachers, in contrast with only one-third of a smaller number in 1992. It meanwhile reduced the total number of uncertified teachers in the city by more than half. (See below.)

More districts have experimented in recent years with bonuses or salary increments to attract recruits for shortage fields or hard-to-staff schools, although the number trying any of these strategies still represents only about 10% of all school districts[45] (see figure 13). About 19% of private schools offer some kind of financial incentive to attract teachers in specific fields. Public schools are more likely to offer free retraining to help teachers prepare in shortage fields like special education, bilingual

Figure 13

Use of Financial Incentives to Address Shortages

(Percentage of public school districts that offered various financial incentives to recruit and retain teachers in less desirable locations or in fields of shortage, 1987-88 and 1993-94)



Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey: 1987-88 and 1993-94 (Teacher Demand and Shortage Questionnaires). Published in National Center for Education Statistics, *America's Teachers*, p. 101.

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Recruiting the Best

Local school districts and teacher education programs are redoubling their efforts to solve the persistent problems of teacher recruitment and preparation. One remarkable example of progress can be seen in New York City, highlighted in last year's Commission report for its difficulties in recruiting qualified teachers. The Big Apple, which has struggled for years with cumbersome and dysfunctional hiring procedures that have led to the hiring of thousands of uncertified teachers annually, has made a commitment to placing a qualified teacher in every classroom. With a set of wide-ranging efforts by its personnel department, New York had come much closer to achieving its goal by the opening of school in 1997 when two-thirds of its 5500 vacancies were filled with fully qualified teachers, as compared to one-third of a smaller number in 1992.

Key to this success are a series of efforts that bring the city's recruiters directly to students in local preparation programs each spring; offer interviews and tests on-site at college campuses; recruit teachers in high-need areas like bilingual and special education through scholarships and forgivable loans as well as strategically located recruitment fairs; work with universities and local districts to bring well-trained prospective teachers into hard-to-staff schools as student teachers, interns, and visitors; make offers to well-qualified candidates much earlier in the year; and streamline the exchange of information and the processing of applications. More efforts are underway to create automated systems for projecting vacancies and processing information, decentralize interviews to principals and committees of teachers in local schools, and strengthen partnerships with local colleges. With expansion of these efforts, the city hopes to fill all of its vacancies with caring, competent, well-qualified teachers by the year 2000.

education or English as a Second Language, mathematics, science, and computer science. School districts offering this retraining are most often those serving large proportions of low-income students.[46]

Whether these efforts will prove sufficient to ensure that all students have access to a diverse, well-qualified teaching force depends on a number of other factors that will take shape over the coming years. These include attractions to teaching, such as salaries and working conditions, and supports that could improve the retention of beginning and mid-career teachers.

Salaries and Working Conditions

The Commission noted that teachers are less well-paid than similarly educated workers, and that the share of the education dollar spent on teachers' salaries dipped below 40% more than a decade ago, as schools became more bureaucratic and spent less of their funds on teaching. One recommendation urged much greater investment in teaching—in a greater number of better-prepared and better-paid teachers—by reallocating to classroom teaching positions some of the funds currently spent on add-on and pull-out programs as well as nonteaching positions that are intended to oversee or supplement the work of teachers. Few states have made much progress on this agenda (see Appendix A), but some individual schools and districts, along with organizations like the New American Schools Corporation, have taken steps to redesign schools so that they focus more of their resources on teaching.[47]

Competitive salaries for teachers have made a greater difference in supply and quality since the 1970s, when the nation lost its once captive labor market for teaching, which had long been maintained by lack of employment opportunities for women and minorities. The opening up of other professional jobs to these groups, coupled with a steady drop in salaries and teacher demand, led to a large decrease in both the numbers of college students choosing teaching and in the academic ability of candidates. By 1983, entrants to teaching were among the least academically well-prepared college students. Furthermore, the most able among them defected from teaching sooner and in greater numbers.[48]

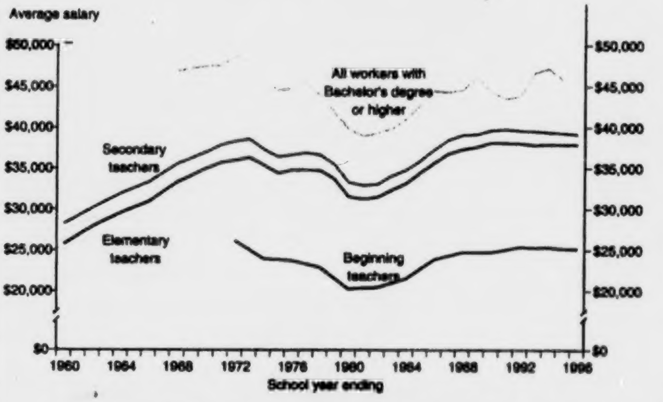
Teachers' salaries climbed during the 1980s, stimulating increases in the supply of teachers as well as the academic ability of new candidates, who now hold better academic records than the average college student.[49] However, salaries have leveled off again since 1990, remaining about 25 percent below those of similarly educated workers at the entry level and nearly 20% below average salaries of those with at least a bachelor's degree[50] (see figure 14). Taking into account their vacation time and income possibilities during the summer, teachers still earn 10 to 15% less than their similarly educated colleagues in other occupations. The differential is highest in fields that require strong backgrounds in mathematics and science, such as engineering and the health professions, where there is a 30 to 50% differential in beginning pay. However, there is also a growing gap between the beginning salaries of teachers and individuals who enter the social sciences.[51]

Meanwhile, teachers are working harder than ever before. In 1996, teachers' average work week of 49 hours, which included 11 hours of noncompensated time after school hours, was longer than it had ever been since trend data were first collected in 1961.[52] Average class sizes remain at about 24, with secondary school teachers carrying course loads of between 5 and 6 periods daily and pupil loads of 124 students at a time. Class sizes and pupil loads were highest in schools with the largest proportions of minority students.[53]

Figure 14

Teachers' Salaries Compared to Those of Other Workers

Average Annual Salaries (in 1996 constant dollars)



Source: NCES, *Digest of Education Statistics, 1996* and Schools and Staffing Survey, 1993-94 (Teacher Questionnaire). U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60. American Federation of Teachers, *Survey and Analysis of Salary Trends 1996*, December 1996.

An ongoing problem in recruiting well-prepared teachers to poor school districts is the continued inequality in funding that plagues American schools. In 1994, the best-paid teachers in low-poverty schools earned over 35% more than those in high-poverty schools (see figure 15). Further-

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more, teachers in more advantaged communities have much easier working conditions, including smaller class sizes and pupil loads, and much more control over decision making in their schools.[54] Teachers in high-poverty schools are much less likely to say they that they have influence over decisions concerning curriculum, texts, materials, or teaching policies. They are also much less likely to be satisfied with their salaries or to feel they have the necessary materials available to them to do their job.[55]

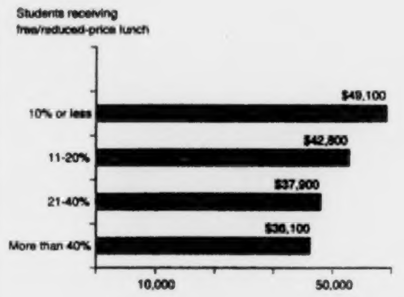
Teacher Retention

Working conditions, including influence over professional decisions, play an important role in determining who stays in teaching. Between 1988 and 1994, teacher attrition rates climbed from 5.6% to 6.6% of all teachers.[56] This was partly due to growing retirements and partly due to the continuing high rates of attrition for beginning teachers, more than 30% of whom leave within the first 5 years of teaching.[57] Of those who left, about 27% retired; 37% left for family or personal reasons; and 26% were dissatisfied with teaching or sought another career.[58] The major areas of dissatisfaction concerned student motivation and discipline, on the one hand, and lack of recognition and support from administration, on the other. Salaries were also a factor, but a somewhat less prominent one. Not surprisingly, attrition rates in 1994 were higher in high-poverty than low-poverty schools, and those who left high-poverty schools were more than twice as likely as those in low-poverty schools to leave because of dissatisfaction with teaching.[59]

Figure 15

Top Public School Teacher Salaries

(By poverty status of students: 1993-94)



Source: National Center for Education Statistics, Schools and Staffing Survey: 1993-94 (Public School and Teacher Demand and Shortage Questionnaires). America's Teachers, p. 71.

Control over salient elements of the working environment is an important factor in teacher retention. Those who left teaching in 1994 were much more satisfied with all of the aspects of their new, nonteaching employment than were those who stayed in teaching. Ex-teachers were most noticeably more satisfied than current teachers with their influence over policy, professional prestige, resources available, support from administrators, and manageability of work. Those who had left also viewed their current salaries, general working conditions, and opportunities for advancement much more favorably than did those who stayed in teaching (see figure 16).

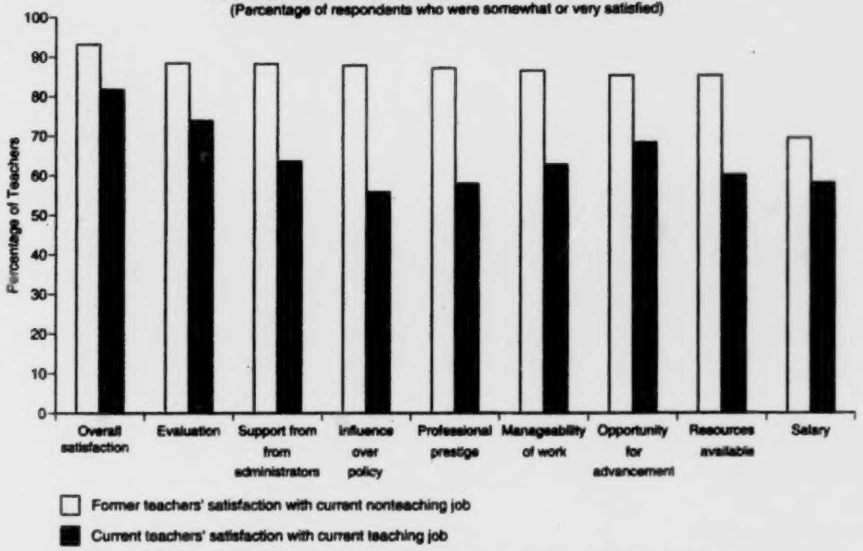
Recent reforms may be improving teachers' satisfaction with some aspects of their work. The proportions of teachers saying they were satisfied with the intellectual challenges of teaching and with their opportunities for advancement increased significantly between 1988 and 1995,[60] as did the proportions of teachers saying they would advise a young person to pursue a career in teaching (see figure 17). It is possible that teachers' growing involvement in curriculum and school reforms, along with greater opportunities for broader professional roles—for example, as mentor and consulting teachers and instructional leaders—have contributed to these changes.

Teachers also feel more positively than they did a decade ago about the quality of preparation their entering colleagues have received, and they feel better about their own salaries and recognition. Fewer report that they have seriously considered leaving teaching. Con-

Figure 16

Job Satisfaction of Current and Former Teachers

(Percentage of respondents who were somewhat or very satisfied)

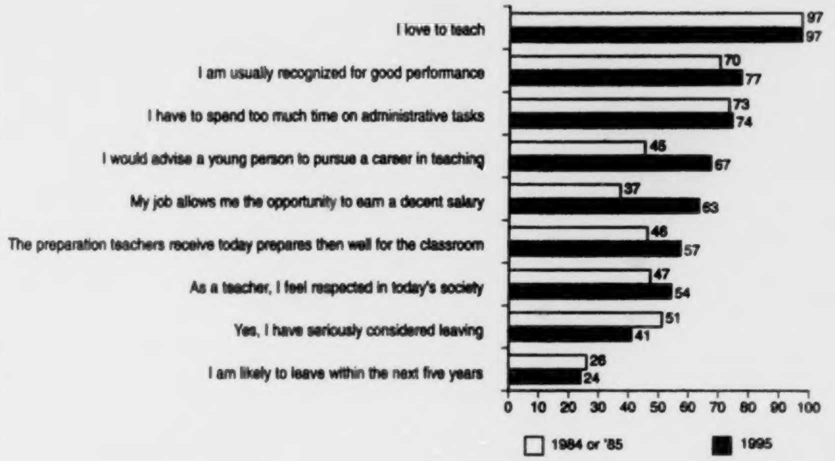


Source: U.S. Department of Education, National Center for Education Statistics, Teacher Follow-up Survey: 1994-95. *America's Teachers*, pp. 90-91, Tables 7.5a and 7.5b.

Figure 17

Trends in Teachers' Views of Teaching

1985-1995



Source: National Center for Education Statistics *Digest of Education Statistics, 1996*, Tables 73 and 75.

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firming these trends is the fact that the proportion of teachers who report they would certainly become teachers again if they had the chance increased from 33 to 40% between 1988 and 1994.[61] This is part of a continuing upward trend since 1981, when the attractiveness of teaching hit its lowest point. Women, elementary teachers, and teachers in small school systems feel most positively about their career choice.[62] It is noteworthy, though, that most teachers are not entirely sure that they would make the same career choice if they had it to do over again.

Teachers' plans to remain in teaching are highly sensitive to their perceptions of their working conditions. About 33% of public school teachers and 49% of private school teachers plan to remain in teaching as long as they are able. These proportions, though, vary widely depending on how teachers feel about administrative support, faculty cooperation, resource provision, and teacher influence over policy in their schools (see figure 18).

In general, teachers feel they have much more control over classroom decisions—such as selecting teaching techniques or determining homework and grades—than they do over school policy decisions, such as curriculum and disciplinary policies, the content of inservice programs, or the hiring and evaluation of teachers. Teachers in public schools feel they have far less influence over important decisions than do teachers in private schools (see figure 19). Teachers in central city and high-minority schools feel they have the least decision making authority. This compounds the other disincentives for teaching in these schools—disincentives that include lower salaries and larger class sizes—which feed, in turn, into the disparities in teacher qualifications and teaching quality that students in different schools experience.[63]

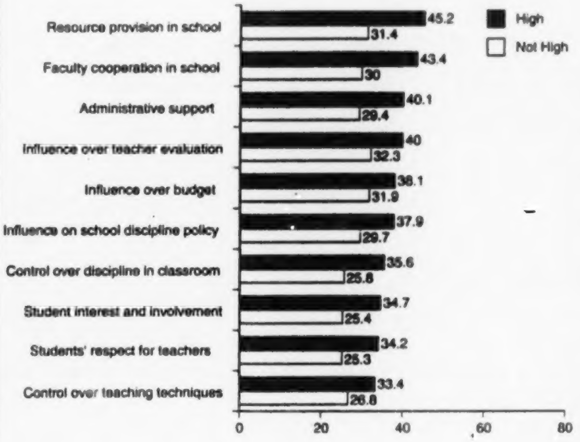
Qualifications and Training

The story regarding teachers' qualifications is one of tremendous unevenness. The good news is that many new teachers are better prepared for teaching than ever before. Recent data indicate that more new teachers are being prepared in redesigned teacher education programs that allow them to get a degree in their field while completing their training in education at the graduate level. In 1994, about 20% of all new entrants to teaching were hired with

Figure 18

Teachers' Views of Teaching and Plans to Stay

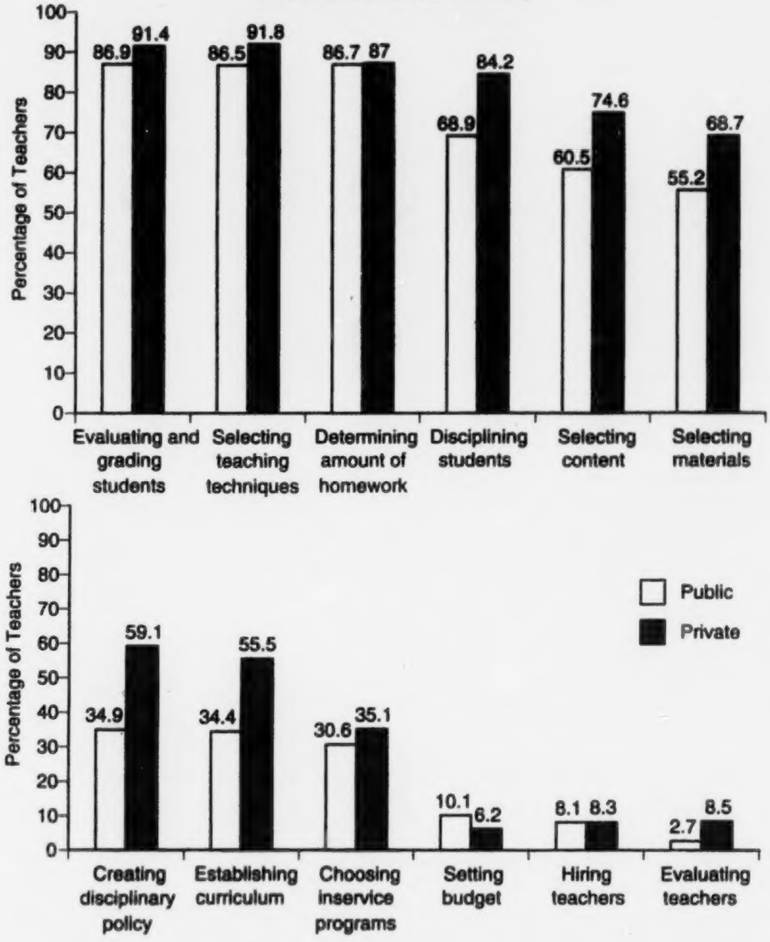
(Percentage of teachers who plan to remain in teaching as long as they are able by perceptions of their work environments: 1993-94)



Source: National Center for Education Statistics, Schools and Staffing Survey: 1993-94 (Public School Teacher Questionnaire). *America's Teachers*, p. 93.

Figure 19

Levels of Teacher Control and Influence
(Percentage of teachers reporting a lot of control or influence over classroom and school decisions)



Source: National Center for Education Statistics, Schools and Staffing Survey: 1993-94 (Teacher Questionnaires). *America's Teachers*, p. 53.

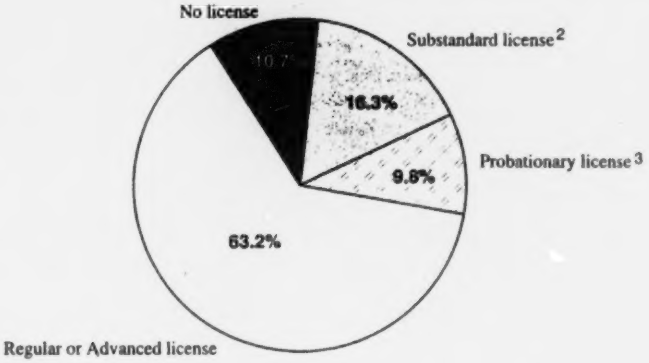
a master's degree as compared to 9% in 1991.[64] In addition, as we noted above, more able individuals are being attracted to teacher training programs than was the case in the 1980s.

The bad news is that the number of newly hired teachers entering the field without adequate training has not declined. In 1991, 25% of new entrants to public school teaching had

Figure 20

Qualifications of Newly Hired[1] Public School Teachers, 1993-94

(Type of state license in main assignment field)



[1] Newly hired teachers include all those hired by schools in 1993-94, excluding those who moved or transferred from one school to another.

[2] A substandard license is an emergency, temporary, provisional, or alternative license issued to someone who has not met the requirements for a standard license.

[3] A probationary license is a license issued to a new teacher who has met all requirements and is completing an initial probationary period.

not completed the requirements for a license in their main assignment field. This proportion increased to 27% in 1994, including nearly 11% who had no license at all in their main field[65] (see figure 20). These teachers continued to be disproportionately assigned to students in low-income and high-minority schools. Meanwhile, the most highly educated new teachers were hired largely by schools serving the wealthiest students (see figure 21). This continues the habit of assigning the least prepared teachers to students with the least clout and the greatest learning needs while the best prepared teachers are hired by schools serving the most advantaged students.

On virtually every measure, teachers' qualifications vary by the status of the children they serve. Students in high-poverty schools are still the least likely to have teachers who are fully qualified, and are most likely to have teachers without a license or a degree in the field they teach. They are also least likely to have teachers with higher levels of education—a master's, specialist, or doctoral degree.[66] Whereas only 8% of public school teachers in low-poverty schools taught without a minor in their main

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What Does It Take To Be A Teacher?

Parents might be surprised to learn that the qualifications of their children's teachers are likely to be dramatically different depending on where they live.

In Wisconsin or Minnesota, for example, a prospective high school teacher must complete a bachelor's degree that includes a full major in the subject area to be taught, plus coursework covering subject matter teaching methods, curriculum, learning and development, teaching strategies, uses of technology, classroom management, human relations, and the education of students with special needs. In the course of this work, she would complete at least 18 weeks of student teaching in Wisconsin (a full college quarter or semester in Minnesota) under the supervision of a cooperating teacher who meets minimum standards. In Minnesota, this experience would include work in a multicultural setting and with special needs students. If a teacher were asked to teach outside the field of her major for part of the day, she must already be licensed with at least a minor in that field, and could receive a temporary license in the new field only briefly while completing a major.

As a consequence of this preparation, parents in Wisconsin and Minnesota can be very sure that their children's teachers will know well the subject they are teaching, and they will understand how to present it in a way that takes account of how children learn, how they develop and what they are ready to learn at different stages. They can also have reasonable confidence that their child's teacher will know about teaching techniques that are effective and up-to-date, that motivate students, that use new technologies, and that enable a smooth-running classroom. And they can bet that if their child has a learning difficulty, the teacher will have some idea of how to diagnose the problem and address it.

By contrast, in Louisiana, a prospective high school teacher could be licensed with neither a major nor a minor in the field she was going to teach. The state would not require her to have studied curriculum, teaching strategies, classroom management, uses of technology, or the needs of special education students, and she could receive a license with as little as six weeks of student teaching. If these constraints were too onerous, the aspiring teacher could be hired as one of the 15% of entering teachers who receive a license which does not meet the minimal standards that exist. Or she could be hired as one of the 31 percent of new teachers who enter with no license at all.

Parents in Louisiana cannot really be sure what their child's teacher knows about subject matter, children, or the learning process. If a child attends a low-income or predominantly minority school, the odds that his teacher will know little about subjects or students are especially great.

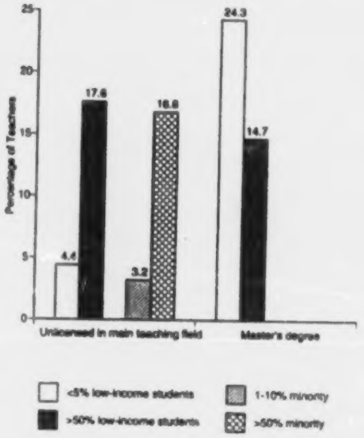
It is no accident that students in Wisconsin and Minnesota score at the top of the country in achievement, while those in Louisiana score near the bottom. As Will Rogers once said: "You can't teach what you don't know any more than you can come back from where you ain't been." Parents might want to know what their child's teacher actually knows.

academic assignment field, fully one-third of teachers in high poverty schools taught without a minor in their main field and nearly 70% taught without a minor in their secondary teaching field[67] (See figures 22-24).

Out-of-field teaching remains a serious concern nationwide. Among public high school teachers in academic fields, 21% lacked a minor in their main assignment field,[68] including 28% of mathematics and 22% of English teachers—

Figure 21

Qualifications of Newly Hired Teachers*, by School Type
1994

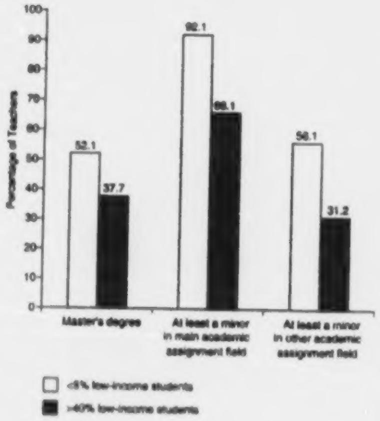


*Newly hired teachers excluding transfers

Source: Schools and Staffing Surveys, 1993-94. Tabulations conducted by the National Commission on Teaching and America's Future.

Figure 22

Teacher Qualifications, by School Type
1994

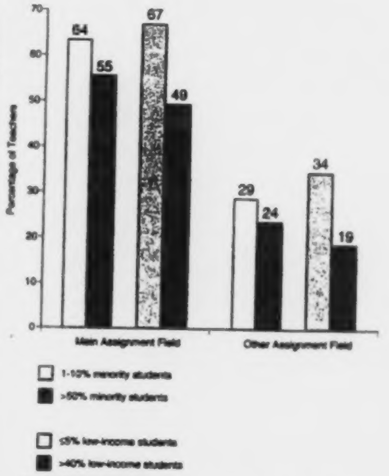


Source: National Center for Education Statistics, America's Teachers, Tables 3.5 and A3.2.

Figure 23

Teacher Qualifications, by School Type

(Proportion of Teachers with a License and a Degree* in the Field They Teach, 1994)



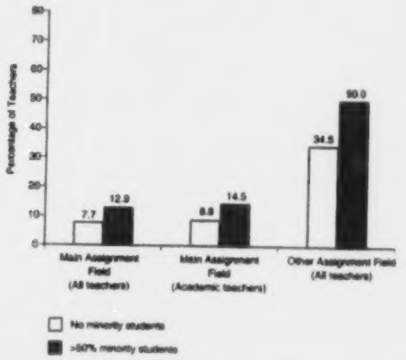
*College major or graduate degree

Source: NCES, *America's Teachers: Profile of a Profession*, 1993-94, 1997, Tables A3.15a and A3.15b (corrected)

Figure 24

Teacher Qualifications, by School Type

(Percentage of teachers lacking full certification, 1994)



Source: NCES, *America's Teachers: Profile of a Profession*, 1993-94, 1997, Tables A3.14a, A3.15a and A3.14b.

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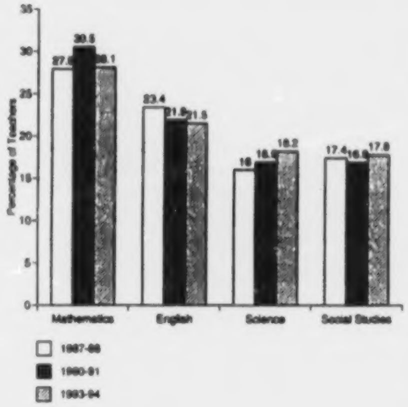
Figure 25

Trends in Out-of-Field Teaching

(Percent of public high school teachers in each field without a major or minor in that field)



Source: Schools and Staffing Surveys, 1987-88, 1990-91, and 1993-94. Teacher Questionnaire. Tabulations by R. Ingersoll for the National Commission on Teaching and America's Future

a slight improvement since 1991—and 18 percent of science and social studies teachers—slightly worse since 1991 (see figure 25). Roughly 20% of secondary teachers in each academic area also lacked state certification in that field, ranging from 17% of science teachers to 24% of mathematics teachers.[69] Proportions of teachers in some kinds of private schools teaching without certification and without a minor in their main assignment area are even larger.[70] This is problematic given the studies that show lower levels of achievement for students whose teachers are not prepared and certified in their subject area.

These problems in the preparation and licensing of teachers are reflected in the performance of U.S. students on international assessments. For example, the U.S. has experienced chronic shortages of mathematics and physical science teachers for more than 40 years and has typically met these problems by lowering standards rather than by increasing the incentives to teach. Between one-fourth and one-third of U.S. mathematics teachers have been teaching out of field for many years. In 1994, just over half of U.S. math teachers had both a license and a major in their field (see figure 25). Given the large number of teachers who are underprepared in mathematics, it should be no surprise that U.S. students continue to compare least favorably with their international peers in this subject, with 8th graders ranking 18th out of 25 countries that met the guidelines for the Third International Mathematics and Science Studies (TIMSS) (see table 3).

U.S. students rank 12th in science out of 25 countries that met the TIMSS guidelines, but 17th in physics. These rankings also appear to be associated with levels of teacher preparation. While general science teachers are relatively well-qualified (only 18% have less than a minor in the field), more than half of physical science teachers are out-of-field by this criterion. As a consequence, 48% of U.S. high school students who take a physical science course are taught by teachers who did not prepare in that field.[71]

On the other hand, U.S. students have compared favorably with students in other countries in reading, ranking at or above the median in 4th and 8th grades. This is partly due to the fact that there have been large investments in teachers' preparation to teach reading at the elementary level—for both reading specialists and "regular" classroom teachers—and there is little hiring of unqualified teachers in these fields. Most districts and schools provide substantial expert support in reading for both teachers and students, while they allocate dramatically fewer resources to similar support in mathematics.[72]

Nationally, there has been little progress in reducing the extent of out-of-field teaching over the last two decades.[73] However, some states have made tremendous strides in continuing to upgrade the qualifications of their teachers. For example, in states like Wisconsin, Iowa, Minnesota, and Montana, at least 80% of

Table 3

Results from the Third International Mathematics and Science Study

(International Rankings of Countries that met the TIMSS Guidelines)

NATION	MATH AVERAGE	NATION	SCIENCE AVERAGE	NATION	PHYSICS PERCENT CORRECT
Singapore	643	Singapore	607	Singapore	69
Korea	607	Czech Republic	574	Japan	67
Japan	605	Japan	571	Korea	65
Hong Kong	588	Korea	565	Czech Republic	60
Belgium-Flemish	565	Hungary	554	Hungary	60
Czech Republic	564	England	552	England	62
Slovak Republic	547	Belgium-Flemish	550	Slovak Republic	61
Switzerland	545	Slovak Republic	544	Hungary	60
France	538	Ireland	538	Canada	59
Hungary	537	Russian Federation	538	Hong Kong	58
Russian Federation	535	Sweden	535	New Zealand	58
Canada	527	**United States**	**534**	Switzerland	58
Ireland	527	Canada	531	Russian Federation	57
Iran, Islamic Republic	428	Norway	527	Sweden	57
Sweden	519	New Zealand	525	Norway	57
New Zealand	508	Hong Kong	522	Ireland	56
England	506	Switzerland	522	**United States**	**56**
Norway	503	Spain	517	Spain	55
United States	**500**	France	498	France	54
Latvia (LSS)	493	Iceland	494	Iceland	53
Spain	487	Latvia (LSS)	485	Latvia (LSS)	51
Iceland	487	Portugal	480	Lithuania	51
Lithuania	477	Lithuania	476	Portugal	48
Cyprus	474	Iran, Islamic Republic	470	Iran, Islamic Republic	48
Portugal	454	Cyprus	463	Cyprus	46

Source: National Center for Education Statistics, *Pursuing Excellence: A Study of U.S. Eighth Grade Mathematics and Science Teaching, Learning, Curriculum, and Achievement in International Context*, by Lois Peak, 1996.

teachers in most fields have both full certification and a major in the field they teach, and very few are teaching out of field (with less than a minor).[74] Not surprisingly, students in these states have also ranked at the top of the distribution in mathematics and reading achievement on the National Assessment of Educational Progress for many years. By contrast, states like Alaska, California, and Louisiana, which rank much lower, have many fewer teachers who hold certification plus a major in their field (generally no more than 60%), and large numbers of teachers teaching with less than a minor (more than 40% in some fields) (see Appendix B).

In addition to the fact that states have widely varying requirements for licensing, school districts do not always insist on qualifications for teaching. Nationwide, only two-thirds of districts require their new hires to hold at least a college minor in the field to be taught, along with full certification and preparation from a state-approved institution. In some states, like Georgia, fewer than half of all districts insist upon these hiring requirements.[75] In others, like Iowa, Minnesota, Kentucky, and Wisconsin, almost all of them do. On the other hand, some districts, like New Haven, California, are creating comprehensive systems of recruitment, preparation, and induction to ensure that they get and keep the best-qualified teachers, even in difficult labor markets. (See below.)

Reforms of Teacher Education and Induction

In its report, the National Commission noted that a sizable number of universities have undertaken major reforms of their education programs, adding a 5th year of study, creating extensive internships with master teachers in professional development schools, and strengthening coursework in both subject matter disciplines and pedagogy. During the past year, the Commission completed a study of seven extraordinary teacher education programs that prepare teachers who are successful at teaching diverse learners effectively.[76] Based on external evaluations and observations of their practice, the graduates of these programs have also developed pedagogical skills that enable them to teach the challenging material envisioned by new subject matter standards aimed at higher levels of performance and greater understanding.

These teacher education programs are located in public and private universities, across all regions of the country, and at the undergraduate and graduate levels. They share several features that directly confront the limitations of traditional teacher education programs:

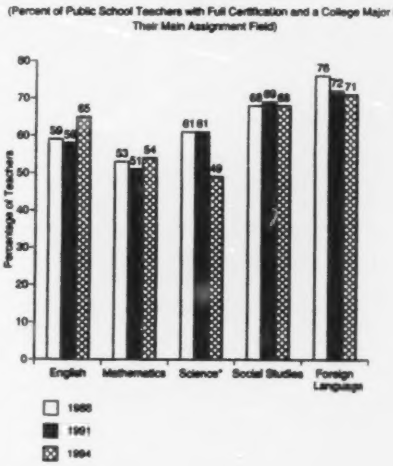
- a common, clear vision of good teaching that is apparent in all coursework and clinical experiences;
- a curriculum grounded in substantial knowledge of child and adolescent development, learning theory, cognition, motivation, and subject matter pedagogy, taught in the context of practice;
- extended clinical experiences (at least 30 weeks) which are carefully chosen to support the ideas and practices presented in simultaneous, closely interwoven coursework;
- well-defined standards of practice and performance that are used to guide and evaluate coursework and clinical work;
- strong relationships, common knowledge, and shared beliefs among school- and university-based faculty;
- extensive use of case study methods, teacher research, performance assessments, and portfolio evaluation to ensure that learning is applied to real problems of practice.

Over the past few years, many other programs have been engaged in redesigning their work to include these features. A growing number of institutions are creating 5-year or 5th-year programs that ensure both a bachelor's degree in a disciplinary field and intensive study of teaching at the graduate level for

Figure 25

Trends in Teacher Qualifications

(Percent of Public School Teachers with Full Certification and a College Major in Their Main Assignment Field)



*There was a small change in coding for science teachers between 1991 and 1994 which could account for the sharp change.

Source: S. Bobbitt and M. McMillen, *Qualifications of the Public School Teacher Workforce: 1988 and 1991*, NCES, 1995, p. 15. NCES, *America's Teachers, 1993-1994*, Table A3.15a (corrected).

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entering teachers—including a year-long school-based internship connected to education coursework. In doing so, they resolve several traditional dilemmas of teacher education: They create time for study of both subject matter and pedagogy, rather than trading off one against the other. They create room for much more extensive clinical experience—typically 30 weeks or more rather than the traditional 8 to 10 weeks of student teaching. And they reduce fragmentation of the curriculum by interweaving coursework with practical experiences, rather than frontloading theory disconnected from practice.

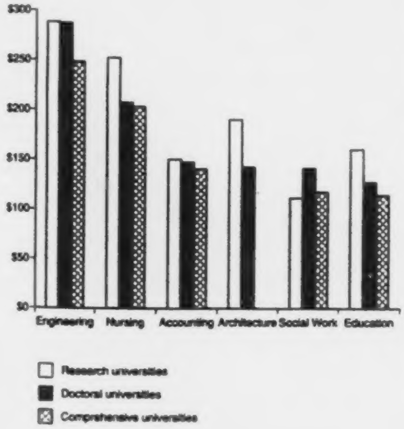
These institutions join a growing number of countries whose teachers are now prepared in programs that extend to the graduate level, among them France, Finland, Germany, Ireland (secondary), Italy (secondary), Luxembourg, the Netherlands, New Zealand, and Portugal.[77] Many U.S. institutions are taking this step because they believe it will enable them to prepare more effective teachers, but they lack the systemic supports by state governments that their counterparts in other countries enjoy.

At the same time, there are still many programs that operate with inadequate resources, knowledge, and motivation to improve. The Commission report noted the longstanding problem that many universities have treated teacher education as a "cash cow" which is conducted on a shoestring and used to fund programs in other fields. This problem continues to exist. A 1997 study confirms earlier research which found that education programs are funded well below the average, generally near the bottom ranks of departments and well below the level of other professional preparation programs[78] (see figure 27). In addition, the National Center for Education Statistics reports that teacher educators receive lower salaries than other education faculty, who in turn, earn significantly lower salaries than

Figure 27

Expenditures In Professional Programs

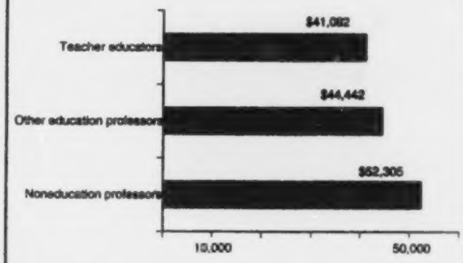
(Per Undergraduate Student Credit Hour)



Source: Richard Howard, Randy Hitz, and Larry Baker, *Comparative Study of Expenditures per Student Credit Hour of Education Programs to Programs of Other Disciplines and Professions*, 1997.

Figure 28

Average Faculty Salaries by Field



Source: National Center for Education Statistics, 1993-94 *America's Teachers*, p. 31

noneducation faculty"[79] (see figure 28).

These conditions make it hard to improve the quality of teacher education, while the lack of enforcement of quality standards in many states removes much leverage for change. As we noted in *What Matters Most*, only three states have required professional accreditation of all education schools, and few state agencies have

Doing What Matters Most:

The New Haven Unified School District, located midway between Oakland and San Jose, California, serves approximately 14,000 students from Union City and south Hayward, most of them working class. Twenty years ago, the district was the lowest wealth district in a low wealth county, and it had a reputation to match. Today, New Haven Unified School District, while still a low-wealth district, has a well deserved reputation for excellent schools.

Twenty years ago, students who could manage to do so went elsewhere to school. Now, the district has to close its doors to out-of-district transfers because schools are bulging at the seams. Still, families try every trick in the book to establish a New Haven district address. The district has received so many state and national awards that one board member quipped they needed to build a new central office to display all the banners. And when school districts across California scrambled last year to hire qualified teachers, often failing to do so, New Haven had in place an aggressive recruitment system and a high quality training program with local universities that allowed it to continue its long-term habit of hiring well-prepared, committed, and diverse teachers to staff its schools.

Of the many factors contributing to the district's success with students, one key was an early recognition of the essential role of teachers and a set of systemic policies in support of quality teaching. Although the district's work began decades before the publication of *What Matters Most*, New Haven has, in its own way, met most of the challenges laid out in that report.

First, New Haven got serious about standards. One of several things the district did more than 20 years ago was to establish high expectations for teachers in terms of both hiring and ongoing performance. They then got serious about assessing teaching—and provided necessary supports for teachers to meet the expectations. The move drew criticism, but it sent an unwavering message that the district was committed to assuring students the teachers they deserved.

Second, the district invested in teacher education. Alongside the required *Educational Leadership* journal in the personnel director's office are well worn copies of the *The Journal of Teacher Education* and *Teacher Education Quarterly*. The district was one of the first in the state to implement a Beginning Teacher Support and Assessment Program that provides support for teachers in their first two years in the classroom. In addition, district leaders foresaw student population growth and California's 20:1 class size initiative. With the support of California State University, Hayward, the district designed an innovative teacher education program that combines college coursework and an intensive internship conducted under the close supervision of school-based educators. Because interns function as student teachers who work directly with master teachers, rather than as teachers of record, the program simultaneously educates teachers while protecting students and providing quality education.

Third, New Haven recruits quality teachers. With the wise and humane use of technology, the resources or capacity to evaluate programs and enforce high standards through their program approval process. Candidates are licensed if they graduate from a state-approved program, and virtually all programs, regardless of their quality, are state-approved. Several more states have taken steps this year to intervene in this vicious cycle by upgrading their standards

Ensuring Quality Teaching at the District Level

the school district recruits from a national pool of exceptional teachers. The district just received the prestigious C. S. Robinson Award from the American Association of School Personnel Administrators for exemplary use of technology in recruiting. The district's use of technology actually personalizes the entire personnel function. For instance, their engaging and educational web site draws inquiries from around the country. Each inquiry receives a personal e-mail response. With the use of electronic information transfer (for example, the personnel office can send applicant files to the desktop of any administrator electronically), the district can provide information to people urban districts might never think would be available to them—let alone immediately with a stroke on the keyboard. Despite the horror stories one often hears about the difficulty of out-of-state teachers earning a California teaching credential, New Haven's credential analyst in the personnel office has yet to lose a teacher recruited from out-of-state in the state's credentialing maze.

Fourth, the school system rewards knowledge and skill. The district provides multiple intangible rewards for teachers—not the least of which is broad-based community support of schools. The district also puts its money where its mouth is. Although it remains one of the two lowest wealth districts in its county, New Haven offers the highest salary scale in the area. In addition, the district staffs classrooms creatively and flexibly so that classroom teachers, while working with children, also enact the internship program and the beginning teacher support and assessment program; develop curriculum; design technological supports; and create student standards, assessments, and indicators of student learning. Teaching in New Haven is conceived as truly professional work.

Finally, New Haven organizes schools around student and teacher learning. With the information the district can gather and analyze with its technological capacities, the district implemented a district-wide extended day program offered on a sliding scale so that all families can participate. The schools are open from dawn until dark providing educational experiences connected with the school program, as well as traditional enrichment activities and clubs. To ensure opportunities for teacher learning, the district opens schools 90 minutes late on Wednesday mornings. Each Wednesday morning, in every school in the district, teachers gather in collaborative teams to teach and learn with each other. As another example of the district putting its money where its mouth is, New Haven's computer expert estimates that for every dollar spent on machinery and software, the district invests another dollar in supporting the teachers' use of those tools.

Taken together, these actions have helped create a district that succeeds with students and inspires confidence from parents. The results of these investments in what matters most have resulted in extraordinary support from the community, which has passed the past three bond levies with more than a two-thirds vote. In a state that has been voting down school taxes for more than twenty years, New Haven voters believe in their schools—and in the benefit they provide to both children and the community.

for licensing and accreditation of programs, and by creating resources and incentives to encourage universities to take seriously the education of prospective teachers. Fifteen states now use NCATE's national professional standards as the basis for state program decisions.

In addition, more states are creating induction programs to provide mentoring and support for beginning teachers. Among teachers with less than 5 years of experience, 55% report that they experienced some kind of formal induction program during their first year of teaching.[80] By contrast, only 16 to 17% of teachers with more than 10 years of experience had had such help when they entered the profession.[81] Like all other education policies, however, access to induction programs varies widely across the country. More than ¾ of beginners report having experienced induction supports in states that put such programs in place several years ago—Connecticut, Florida, Indiana, Kentucky, Missouri, North Carolina, Oklahoma, and Pennsylvania. However, in states like Rhode Island and Massachusetts that have relied only on local initiatives, fewer than 15% of beginning teachers have received any kind of systematic mentoring.

Access to Professional Development

Teachers' later access to professional learning opportunities also varies substantially. Nationally, relatively few teachers have access to sustained, intensive professional development about their subject matter, teaching methods, or new technologies. In 1994, about half of all teachers had some exposure to professional development regarding the uses of educational technology, student assessment, or cooperative learning; however, most of these learning opportunities were extremely short-term—usually one-time workshops. Only a small fraction of teachers (15% or fewer) spent at least nine hours engaged in any of these areas of learning (see figure 29). This is probably because the vast majority of professional development opportunities were district-sponsored workshops that are typically delivered as one-day events.[82]

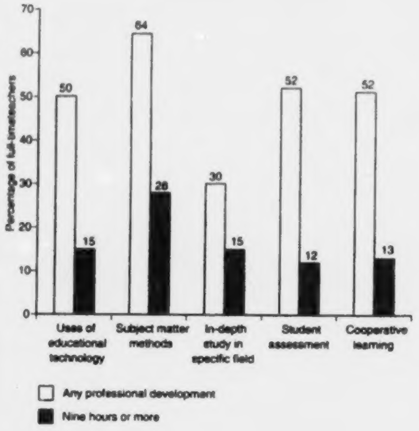
In addition, while more teachers (about 64%) had at least brief exposure to some study of teaching methods, only about 30% engaged in in-depth study in their subject matter field. This is particularly important given the current emphasis on new student standards in the disciplines and the critical need for teachers to develop a broad repertoire of methods for teaching a wider range of students to succeed with much more challenging material.

Teachers are remarkably positive about any and all opportunities for learning. The great majority (85%) report that whatever professional development they encountered provided them with new and useful information. Although somewhat fewer report that the learning opportunities they experienced changed their practice (65%), almost none report that they were a waste of time (11%).[83]

Access to professional development varies

Figure 29

Teacher Participation in Professional Development 1993-94



Source: National Center for Education Statistics, *Schools and Staffing Surveys*. Public School Teacher questionnaire. Tabulations by National Commission on Teaching an dAmerica's Future

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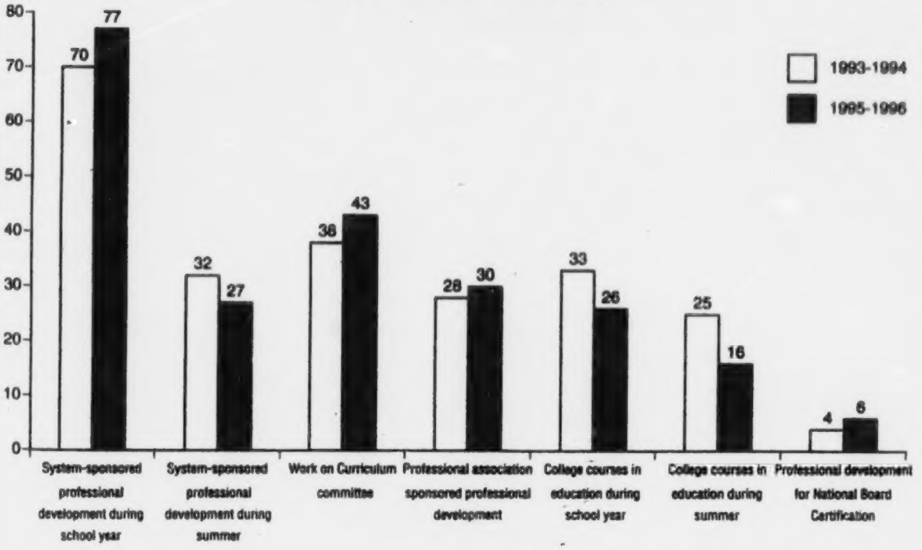
substantially across states. In recent years, Kentucky has had the most widespread professional development opportunities of any state: In 1994, more than 70% of teachers in Kentucky reported that they had pursued professional development opportunities regarding uses of technology, teaching methods, student assessment, and cooperative learning. Kentucky teachers were also more likely than most others to say that the professional development they experienced changed their practice.[84] By contrast, only one-third of teachers in Arkansas and Nevada had had any opportunity to learn about uses of technology; and only 10% of teachers in Illinois, New Mexico, or Tennessee had the chance to spend more than one day studying their subject area (see Appendix B).

In recent years, participation in certain kinds of professional development seems to have increased, while engagement in other kinds has declined. More teachers participated in professional development sponsored by their school district during the school year in 1996 than in 1994 (up to 77% from 70%), but fewer participated in such professional development during the summer. Between 1994 and 1996, a growing number of teachers worked on curriculum committees, engaged in learning activities sponsored by professional associations, and participated in professional development aimed at National Board Certification (see figure 30). The fact that 6% of public school teachers participated in professional development related to National Board Certification means that, although fewer than 1,000 teachers have thus far received certification, at least 160,000 have

Figure 30

Participation in Professional Growth Activities

(Percent of Teachers, 1994 to 1996)



Source: NEA, *Status of the American Public School Teacher*, 1995-96, pp. 248-252.

taken steps to prepare for it. Meanwhile, a number of universities have begun to develop advanced master's degree programs based on the National Board's Standards which will support teachers in developing more accomplished teaching practice.

At the same time, the proportion of teachers taking college courses in education or in other fields during the school year and during the summer has declined noticeably.[85] Whether this is because teachers were less interested in taking such courses, because more teachers are entering having already completed their master's degree, or because school districts offered less support for college course-taking is not known. The 40 percent of teachers who did take college coursework over the last three years spent an average of about $2,000 of their own money for tuition and expenses.[86]

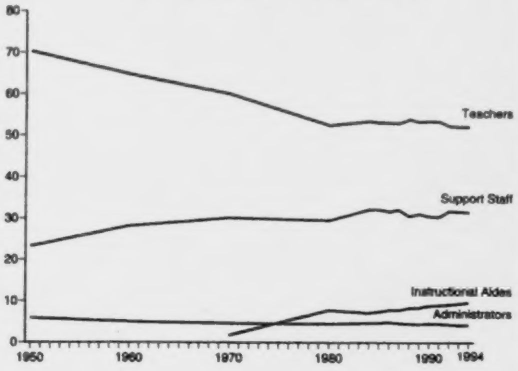
There are promising signs that, at least in some schools, teachers have growing access to opportunities to learn which are helpful to them and their students. The continuing issue for professional development is how to make more sustained, in-depth opportunities for teacher learning more widely and routinely available in schools across the country.

Progress in School Reform

Teachers need not only knowledge and skills but also conditions in which they can teach well. These include common standards for student learning, more continuous and extended time for working with students and families, and more time for collaborative planning and learning with other colleagues. As we described in *What Matters Most*, schools that focus on in-depth learning for students and teachers have enacted curriculum changes, redesigned schedules, and new patterns of staffing and resource use, including investments in teaching and technology rather than nonteaching functions. In order to afford both smaller pupil loads for teachers and greater time for collegial work, more of the staff who are now working in pull-out programs, administrative roles, and support offices need to be working in the classroom, as they do in most other industrialized countries.

Figure 31

Proportions of Staff by Functional Area



Source: NCES, *Digest of Education Statistics, 1996*, Table 81.

The extremely bureaucratic organization of U.S. schools seems to be changing slowly, if at all. In 1994, the proportion of school staff who were teachers had continued its steady decline since 1950 (see figure 31). Among the 52% of staff who were classified as teachers, only about 43% were regularly assigned as classroom teachers. This explains why, even though the ratio of pupils to instructional staff is 13 to 1, average class sizes remain at about 24 and reach 35 or more in many central cities, and teachers still have almost no time to consult with one another.[87]

Despite these constraints, most teachers report that their schools are working on a variety of school reforms, including the use of a broader range of teaching methods and assessment methods, an expansion of the "basics" to include computer literacy and problem solving, and the greater involvement of teachers and principals in decision making concerning scheduling, curriculum, personnel, and budgets. Over 70% of teachers report at least partial implementation of reforms in these areas, but many fewer see their schools as having fully implemented these changes, and fewer still report much progress on flexible scheduling designed to promoted more in-depth, integrated learning or the use of criteria for mastery rather than seat time as the basis for gauging student progress[88] (see figure 32).

The use of technology in school is also increasing slowly. In 1995, only about one-fourth of teachers were using computers or calculators in the classroom[89] while over 87% used the blackboard. Teachers and students were less likely to use computers in secondary schools than in elementary schools. As we noted earlier, teachers are still not getting enough inservice training to use technology. A recent review of state policies found that, while 44 states reported that they require or recommend integrating technology into the curriculum, only Alabama and the District of Columbia require inservice training in technology for all teachers. State budgets for technology supports vary greatly: some state educational technology budgets amount to several million dollars, while other state budgets would not cover more than a single staff person.

When asked what would help them use technology better, teachers who responded to a survey by the Office of Technology Assessment[90] cited the need for more knowledge about how to use technologies and more knowledge about how to organize and manage their students in technology-based school environments. Several factors were found to influence teachers' use of technology: 1) access to technology; 2) on-site technical support; 3) technology training; and 4) school time for instructional integration and planning. Several new state and federal initiatives tackle these conditions head-on, and may make an important difference for bringing schools into the information age in ways that really transform students' and teachers' opportunities to learn.

Evidence of Progress: Federal, State, and Local Initiatives

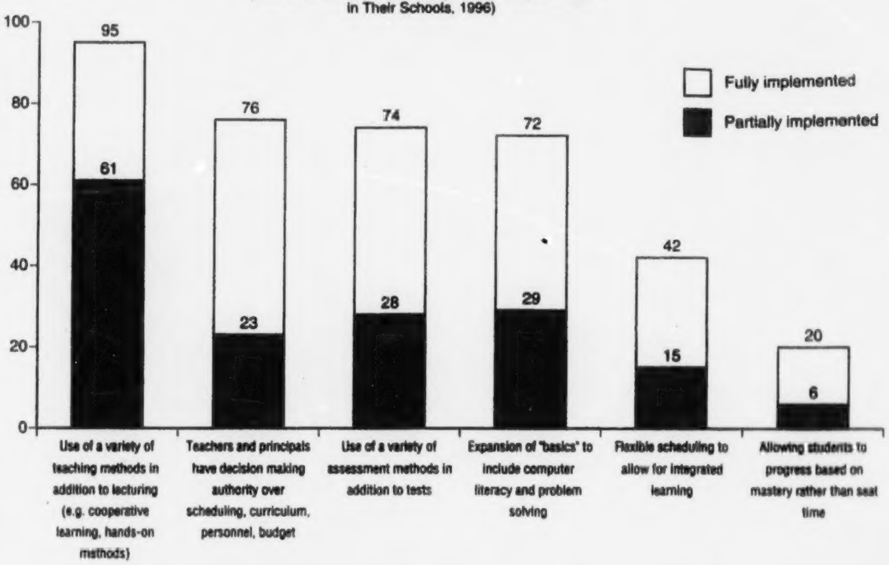
While there is a long way to go, important progress is being made in all of these areas with the leadership of policymakers, practitioners, and concerned public members across the country. Organizations like the National Governors' Association, the National Conference of State Legislatures, the Education Commission of the States, the National Education Association, the American Federation of Teachers, the American Association of Colleges for Teacher Education, the National Urban League, and a wide range of associations representing state and local boards, administrators, subject matter teachers, and parents have engaged their members in serious consideration of the issues associated with teaching standards, teacher accountability, and support for teacher learning and performance. Almost every major metropolitan news outlet featured stories about teaching quality when children returned to school this fall, a sign that the public is getting serious about what matters most. Most states and many school districts undertook renewed steps to focus on teaching quality, as did the United States Congress. Americans seem ready to work on this agenda.

Federal Initiatives: Investing in Recruitment and Preparation

The National Commission's recommendations are reflected in five federal legislative proposals in the current (1997) Congressional session and a bevy of enactments in state and local districts. All of the federal proposals revise Title V of the Higher Education Reauthorization Act, a compendium of 20 teacher education and recruitment provisions of which only one, a $2.2 million teacher recruitment pro-

Figure 32

Implementation of School Reforms
(Percent of Teachers Reporting Reforms Implemented in Their Schools, 1996)



Source: NEA, *Status of the American Public School Teacher*, 1995-96, p. 89.

gram, has ever been funded.

The Clinton Administration included in its legislative package a bill aimed at improved teacher preparation and recruitment in urban and rural schools.[91] The Lighthouse Partnerships for Teacher Preparation and Teacher Recruitment for Underserved Areas bill (S. 1209) authorizes $350 million to subsidize the preparation of 35,000 teachers who agree to work for at least three years in hard-to-staff urban and rural schools in high-poverty areas. Their preparation would be supported through competitive grants to colleges and universities with exemplary teacher education programs.

The TEACH Act (Teacher Excellence in America Challenge Act of 1997, S. 1169), introduced by Senator Jack Reed (RI), would provide competitive grants for school-university partnerships that launch professional development schools to improve teacher preparation, induction, and professional development. Priority would be given to schools serving high percentages of low-income children and to efforts that help teachers work with diverse student populations, implement research-based practices that improve student achievement, prepare teachers to use technology to help students achieve to high standards; and involve parents.

America's Teacher Education Improvement Act (S.1201), introduced by Senator William Frist (TN), is designed to replace Title V except for the existing minority recruitment provision. S. 1201 authorizes $250 million a year over four years to fund educator recruitment, preservice education, and induction. The bill encourages partnerships among teacher preparation programs and other campus units, community colleges, schools, and community organizations, among others.

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The Teaching Excellence for All Children Act (H.R. 2228) was introduced by Representative George Miller (CA). The bill would give parents the right to know the qualifications of their child's teacher and would require colleges receiving federal funds for teacher training to become nationally accredited or provide evidence that at least 90 percent of their graduates pass state licensing requirements. Graduates who teach in high-poverty schools could have student loans forgiven, and school districts in high-poverty areas could form partnerships with colleges to provide intensive teacher training through a Beginning Teacher Recruitment and Support Program.

The Technology for Teachers Act (S. 839), introduced by Senator Jeff Bingaman (NM), is aimed at ensuring that teachers get the training they need to make effective use of technology in the classroom. It would fund partnerships among colleges, school districts, state education departments, and the private sector to improve the preparation of both preservice and inservice teachers in the use of the latest education research and the most current technology available.

Each of these bills tackles different aspects of the Commission's recommendations concerning standards, recruitment, preparation, professional development, and school restructuring. Action on all of them would move the country a giant step closer to meeting the goal of assuring each student a qualified, competent, caring teacher by the year 2006.

State Actions: Transforming Standards and Systems for Teaching

States are getting serious about standards for teaching. By the fall of 1997, 41 states had entered into partnerships with the National Council for the Accreditation of Teacher Education (NCATE) and nine had required accreditation of all public institutions. In part because of these actions, 51 teacher education institutions decided to undertake accreditation review this year, joining the 500 already accredited. Meanwhile, NCATE announced its plans to move to performance-based accreditation by the year 2000, revamping standards so that they focus more on evidence of candidate knowledge and demonstrated teaching skill and less on measures of inputs and process.

More than 20 states had adopted or adapted INTASC standards for licensing beginning teachers, and 18 were engaged in developing or piloting new assessments based on these standards. Twenty-six states and more than 70 districts had enacted incentives for teachers to pursue National Board certification. The number of Board-certified teachers reached 911 by November, 1997. Meanwhile, more than 150,000 teachers participated in professional development aimed at Board certification. Increased federal appropriations have allowed the Board to launch 5 more certificates for the 1998-99 school year and complete 26 certificates (covering 95% of all teachers) by the year 2000.

The Commission's twelve partner states undertook a wide-ranging set of reforms affecting almost all aspects of teaching. *North Carolina* passed the ambitious Excellent Schools Act of 1997, which enacted nearly all of the recommendations of the National Commission that were not already in place in the state. The Act ties higher salaries for teachers to higher standards and creates greater learning opportunities as it:

- *increases salaries* by an average of 33 percent over 4 years;
- *strengthens licensing* by creating a three-tiered system of initial, continuing, and advanced certification tied to performance assessments;
- *establishes rewards for knowledge and skills* by providing additional salary increments for passing assessments for a continuing license after 3 years, passing tenure review after 4 years, obtaining National Board certification (for which teachers earn a 12%

increase), and earning a master's degree;

- *improves teacher education* by raising entry standards, establishing school-university partnerships to create clinical school settings, requiring special education training for all newly prepared teachers, and revising master's degree programs;
- *enhances mentoring of beginning teachers* by setting standards for the selection of mentor teachers and providing funds to train and compensate mentors; and
- *funds professional development tied to student standards.*

Another initiative will create professional development school partnerships for the clinical training of beginning and veteran teachers at all 15 North Carolina public teacher education institutions by the year 2000, a far-reaching endeavor that is already well underway.

Since September of 1996, *Ohio* has also put in place a comprehensive new infrastructure for preparing, licensing, and promoting the professional development of teachers. Following extensive groundwork laid by public committees, the State Board and legislature enacted policies[92] that:

- *adopt performance-based standards for teacher licensing* compatible with INTASC and National Board standards. These rigorous standards spell out what teachers should know and be able to do; they will be tied to performance assessments for an initial and continuing license.
- *require teacher education programs to meet NCATE standards* and to demonstrate that their graduates can meet the new licensing standards and performance assessments;
- *provide mentors for all beginning teachers and principals* and require that beginners pass performance assessments evaluated by state assessors to receive a professional license;
- *require license renewal every five years* based on professional development approved by newly-established local professional development committees comprised of teachers and administrators;
- *require a master's degree or the equivalent* within 10 years of entry into the profession;
- *support National Board certification* by underwriting fees for 400 teachers in 1997-98, allocating $30,000 to each of 10 higher education institutions providing assistance to candidates, and paying an annual $2,500 stipend to those who are certified;
- *encourage peer review and assistance* through competitive grants to school systems that implement peer review programs and fund training for mentor teachers at regional professional development centers.

In addition, the state has taken steps to enable schools to develop new forms of organization and scheduling that will better support student and teacher learning. The *Venture Capital* program has provided funds for more than 500 schools to create fresh approaches to curriculum, teaching, scheduling, governance, and professional development. This school year, 11 school districts have been selected to launch a new *Standards Deregulation Pilot Program* that will give them greater freedom to innovate in exchange for continued high performance and improvement under the proposed Standards for Ohio's Schools. Finally, the State Board of Education has authorized the waiver of rules that constrain scheduling and school structure to provide flexibility needed to create time for professional development.

Oklahoma sharply expanded its appropriations to the Commission for Teacher Preparation for implementing a *competency-based program of teacher licensure* and for launching *professional development institutes*, the first of which will focus on the teaching of reading. Subsequent institutes will be established to focus on the teaching of mathematics, the teaching of inquiry-based science, the use of technology in the classroom, and the training of mentors for beginning teachers. The state also established an Education Leadership Program to assist teachers in seeking *National Board certification* by creating training programs in universities; paying for assessment fees and scholarships to support released time, travel, and other costs; and paying a $5,000 salary increment for Board-certified teachers.

A number of states have redesigned teaching standards and created partnerships with universities and schools to incorporate the new standards into preparation and professional development programs. *Maryland's* State Board of Education has launched a Redesign of Teacher Education which includes adoption of *NCATE standards* for accreditation of education programs, *INTASC-based standards* as the basis for new performance assessments for licensure, and *National Board standards* for ongoing professional development. The Board approved a budget request to launch 240 new *professional development schools* to expand upon the current efforts of its thirteen universities. All prospective teachers will ultimately be expected to complete a year-long internship in such a school. The legislature also enacted fee incentives and continuing education credits for teachers pursuing *National Board Certification*.

Kansas completed a plan for the *redesign of teacher licensure* that is also standards-based, compatible with the INTASC and National Board standards, and embedded in a continuum of teaching standards and ongoing professional development. It will create a new induction program and hold teacher education programs accountable for the performance of their graduates. The Kansas Teacher Development Coalition housed at the University of Kansas, a collaboration of state agencies, higher education institutions, and other educators, is working on aligning preservice education and induction-related professional development with this redesign. Meanwhile, each of the six Regents institutions has established professional development school partnerships for the clinical preparation of new teachers.

Indiana's Professional Standards Board has also adopted a set of *interlocking standards* based on NCATE, INTASC, and National Board standards for accreditation, licensing, and professional development. These will be linked to performance-based assessments. In June 1997, the Board approved the design of an assessment system for preservice education, licensure, and relicensure. The Indiana Alliance, a network of six school-university partnerships, is working to align preservice education with the NCATE and INTASC standards, and to stimulate professional development and assessments of teachers in schools consistent with the National Board standards.

Maine also developed *new standards for teacher licensing* that are based on the INTASC standards and tied to Maine's Learning Results for Children. Eight colleges are developing and piloting performance-based assessments of the standards. *Kentucky* began implemention in 1996 of its new *performance-based licensing and accreditation requirements* with performance assessments in schools of education. These assessments and the Kentucky Teacher Internship program, which provides a trained mentor teacher for each beginner, are based on standards that reflect the Kentucky Education Reform Act (KERA) reforms.

The *Illinois* State Board of Education adopted a *standards-based framework* for redesigning preparation, licensing, and professional development relying on INTASC and National Board standards. Six advisory groups of over 200 educators, parents, business and community leaders developed specific strategies to implement the framework. Nine pilot sites are aligning preservice education with INTASC standards, and funds have been provided to create school-university partnerships. Schools receiving technology funds must devote at least 25% to professional development. Institutes on student and teacher standards in the areas of reading, math, and science are being initiated this year, along with supports for National Board Certification.

Montana's Commission on Teaching has also approved recommendations for supporting *National Board Certification*, including renewal units toward state recertification, scholarships to support fees, and a salary bonus for successful candidates. Several universities have created support programs for teachers pursuing certification and are aligning their preparation programs with National Board standards. The state has developed a pilot program for *teacher mentoring* and a guide for teacher mentors.

Georgia's Board of Regents has made teacher preparation its top priority for the 1997-98 year. The Board already requires all public schools of education to be nationally accredited. This past year, the state took further steps toward systemic teacher education reform through challenge grants to local P-16 councils that work on the co-reform of schools and teacher education. Three of these sites will be pilots for a national initiative to link K-12 content standards with standards for teacher education and the strengthening of content pedagogy in collaboration with the Council for Basic Education and the American Association of Colleges for Teacher Education.

Missouri has added new incentives for school reform to the initiatives launched in 1993 by the Outstanding Schools Act, which allocated 1% of state appropriations and another 1% of local funds to professional development. This past year, the Missouri Association of School Administrators and the University of Missouri-Columbia, in collaboration with the state, created a *Superintendents' Institute* to help prepare leaders as change agents who are knowledgeable about innovation, the process of change, and successful practices. New *incentive grants for innovation* will also help schools and districts implement programs based on powerful theories of teaching and learning, adapt innovations proven successful elsewhere, and disseminate practical solutions to persistent problems. The state continues to deepen its teacher education reforms by creating *professional development schools (PDS)* through its Regional Professional Development Centers. The Commission on Teaching is considering PDS standards, a statewide support network, and a stable funding structure for professional development schools.

Many other states enacted policies in 1997 in support of higher quality teaching. *Alabama* raised teacher salaries; *Arkansas* passed ambitious legislation that raised teacher salaries and improved benefits, created supports for National Board Certification, and increased teacher planning time; *California* expanded its beginning teacher program, created supports for National Board Certification, and expanded recruitment incentives for teachers; *Colorado* authorized the issuance of a license to any National Board Certified teacher; *Connecticut* developed new performance-based licensing rules, became a partner state with NCATE, and expanded its requirements for inservice professional development; *Florida* revised its state licensing requirements to incorporate evidence of teacher proficiency; *Massachusetts* enacted new testing requirements for teacher licensure and provided grants to districts for mentoring and assessing beginning teachers; *New Jersey* passed the Education Technology Teacher Training Program, strengthening teachers' preservice and inservice preparation in the use of new technologies; *North Dakota* improved teachers' retirement benefits; *Rhode Island* has introduced new, INTASC-compatible standards for beginning teachers and requirements for portfolio assessments of preservice teachers; *South Carolina* raised teachers' salaries, enacted incentives for National Board Certification, and charged the State Board with upgrading standards for teacher education programs, enacting tests for licensure, and developing an induction program for beginning teachers; *Virginia* passed supports for teacher technology training and created a scholarship program for recruiting minorities to teaching; *Washington* strengthened standards governing the probationary period for beginning teachers and the relevance to teaching of professional development courses pursued for experience credits; and *West Virginia* created a scholarship program to recruit teachers in high-need areas.[93]

Conclusion

Every September, parents ask the same, important questions. Who is teaching my child? Will my child's teacher inspire her? Will she look after his individual needs? Will this teacher help her learn all the necessary basic skills, as well as how to think and problem solve as she will need to in the years ahead? Will my child's teacher be knowledgeable not only about the subjects he teaches, but about the children he teaches as well?

Much progress has been made over the last year toward answering these questions in the affirmative. However, much more work needs to be done. More parents need to demand that their children and other children are taught by well-prepared and qualified teachers. More business leaders need to demand that schools invest in teacher development, just as they invest in their own employees. More policy makers need to make quality teaching and the recruitment of well-prepared teachers their number one education priority. More college faculty need to redesign their preparation programs, and more college presidents need to invest in the quality of training they provide prospective teachers and principals. More school leaders need to draw upon the best practices available to create a coherent system of teacher development at the state and local levels. And more teachers need to insist that their occupation become a true profession—a profession that supports their commitment by guarenteeing them access to the knowledge they need to help their students succeed.

With perseverance and determination, we can take the remaining steps needed to ensure that our students have a genuine right to learn—a right made real by their opportunity to study with a caring, competent, and committed teacher.

Endnotes

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[13] National Center for Education Statistics, *Digest of Education Statistics, 1994*. Washington, D.C: U.S. Department of Education, 1994.

[14] National Center for Education Statistics, *America's Teachers: Profile of a Profession, 1993-94*. Washington, D.C.: U.S. Department of Education, 1997, table A3.2.

[15] Newly hired teachers in a given year include new teachers and those who moved or transferred to another school. "New entrants" are those who were not teaching in the previous year (i.e. new hires exclusive of migrants or transfers). National Center for Education Statistics, Schools and Staffing Surveys, 1993-94, *Public School Teacher Questionnaire*. Tabulations conducted by the National Commission on Teaching and America's Future.

[16] National Center for Education Statistics, *National Assessment of Educational Progress 1996 Mathematics Report Card for the Nation and the States*. Washington, D.C.: U.S. Department of Education, 1997, Table D.1.

[17] National Center for Education Statistics, *Condition of Education, 1997*. Washington, D.C.: U.S. Department of Education, 1997, pp. 294-296.

[18] National Center for Education Statistics, *Schools and Staffing in the United States: A Statistical Profile, 1993-94*. Washington, D.C.: U.S. Department of Education, 1996, Table A3, p. 154.

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[37] National Center for Education Statistics, *Projections of Education Statistics to 2007*. Washington, D.C.: U.S. Department of Education, 1997.

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[40] NCES, *America's Teachers*, pp. 97-98. About 3/4 of graduates who applied for teaching positions received offers and 90% of those who received offers accepted them (about 67% of all applicants). Interestingly, a number of recent bachelor's degree recipients who had prepared to teach reported they had not completed all requirements for entering teaching, probably reflecting the fact that many states now require tests and some graduate study before licensure. Of those who prepared to teach in undergraduate school but did not do so in the year after graduation, 33% said they had not taken or passed the necessary tests, 24% said they needed to obtain more education, and 2% felt they were not yet ready.

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[43] Connecticut State Department of Education Division of Research, Evaluation, and Assessment, *Research Bulletin School Year 1990-91 No. 1*. Hartford, CT: Bureau of Research and Teacher Assessment, 1991.

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[49] In 1994, bachelor's degree recipients who prepared to teach had higher GPAs than the average college graduate. NCES, *America's Teachers*, p. A-52.

[50] NCES, *The Condition of Education, 1997*, pp. 178, 412.

[51] Recent College Graduates Surveys, 1987 and 1991; National Center for Education Statistics, *The Digest of Education Statistics, 1996*, p. 412. Washington, D.C.: U.S. Department of Education, 1996.

[52] National Education Association, *Status of the American Public School Teacher, 1995-96*, p. 42.

[53] NCES, *America's Teachers*, pp. A-119 and A-128.

[54] NCES, *America's Teachers*, Tables A4.15-A4.16.

[55] Schools and Staffing Surveys, 1993-94. *Public School Teacher Questionnaires*. Tabulations conducted by the National Commission on Teaching and America's Future.

[56] National Center for Education Statistics, *Characteristics of Stayers, Movers, and Leavers: Results from the Teacher Followup Survey, 1994-95*. Washington, D.C.: U.S. Department of Education, 1997.

[57] NCES, *Characteristics of Stayers, Movers, and Leavers*, pp. 6-7.

[58] NCES, *America's Teachers*, p. 109.

[59] Low-poverty schools are those with less than 5% of their students receiving free or reduced-price lunch. High-poverty schools are those with more than 50% of their students receiving free or reduced-price lunch. Schools and Staffing Surveys, *Teacher Followup Survey 1994-95*, Tabulations conducted by the National Commission on Teaching and America's Future.

[60] NCES, *America's Teachers*, p. 91.

[61] NCES, *America's Teachers*, p. 93.

[62] NEA, *Status*, p. 62.

[63] NCES, *America's Teachers*, Table A4.15.

[64] NCES, *America's Teachers: Profile of a Profession, 1990-91*. Washington, D.C.: U.S. Department of Education, 1993; Schools and Staffing Surveys, 1993-94, *Public School Teacher Questionnaires*. Tabulations conducted by the National Commission on Teaching and America's Future.

[65] In 1994, these statistics included 10.7 percent of newly hired, non-transferring public school teachers (new hires who had not been teaching the year before) who had no license in their main field, plus 16.3 percent who were hired on substandard licenses (emergency, temporary, provisional, or alternative licenses). Tabulations conducted by the National Commission on Teaching and America's Future using data from the Schools and Staffing Surveys, 1990-91 and 1993-94, *Public School Teacher Questionnaires*.

[66] NCES, *America's Teachers, 1993-94*, p. 30.

[67] NCES, *America's Teachers, 1993-94*. Tables 3.5 and A3.

[68] Schools and Staffing Surveys, 1993-94, *Public School Teacher Questionnaire*. Tabulations conducted by the National Commission on Teaching and America's Future.

[69] These proportions include all teachers who teach any courses in the field, not just those whose main assignment is in that field. Schools and Staffing Surveys, 1993-94, *Teacher Questionnaire*. Tabulations conducted by the National Commission on Teaching and America's Future.

[70] NCES, *America's Teachers, 1993-94*, p. A-48.

[71] Schools and Staffing Surveys, 1993-94. Tabulations conducted by the National Commission for Teaching and America's Future.

[72] J. Price and Deborah Ball, " 'There's always another agenda': Marshalling resources for mathematics reform," *Journal of Curriculum Studies* (in press).

[73] NEA, *Status*, p. 32.

[74] See Appendix B.

[75] Schools and Staffing Surveys, 1993-94. *Public School District Survey*. Tabulations conducted by the National Commission on Teaching for America's Future.

[76] The seven programs are at Alverno College in Milwaukee, Wisconsin; Bank Street College of Education in New York City; Trinity University in San Antonio, Texas; University of California at Berkeley; University of Southern Maine; University of Virginia in Charlottesville; and Wheelock College in Boston, Massachusetts. The outcome evidence collected included reputational evidence about quality from scholars

and from practitioners who hire program graduates; surveys and interviews of graduates about their perceptions of their preparation in comparison with a comparison group drawn randomly from beginning teachers across the country; surveys and interviews of principals about their perceptions of the graduates' preparation and performance; and observations of graduates' practice in their classrooms.

[77] OECD, *Education at a Glance, 1995* and the National Commission on Teaching and America's Future, *What Matters Most.*

[78] Richard Howard, Randy Hitz, and Larry Baker. *Comparative Study of Expenditures per Student Credit Hour of Education Programs to Programs of other Disciplines and Professions.* Montana State University-Bozeman, Fall, 1997; see also, H. Ebmeier, S. Twombly, and D.J. Teeter, "The Comparability and Adequacy of Financial Support for Schools of Education," *Journal of Teacher Education* (1991), pp. 226-235.

[79] NCES, *America's Teachers*, p. 31.

[80] Schools and Staffing Surveys, 1993-94, *Public School Teacher Questionnaire.* Tabulations by the National Commission on Teaching and America's Future.

[81] NCES, *Schools and Staffing in the U.S.: A Statistical Profile, 1993-94.* Washington, D.C.: U.S. Department of Education, p.8.

[82] NCES, *America's Teachers*, p. 38.

[83] Schools and Staffing Surveys, 1993-94. *Public School Teacher Questionnaire.* Tabulations by the National Commission on Teaching and America's Future.

[84] Schools and Staffing Surveys, 1993-94. *Public School Teacher Questionnaire.* State-by-state tabulations conducted by the National Commission on Teaching and America's Future.

[85] NEA, *Status*, pp. 248-252.

[86] NEA, *Status*, p. 268.

[87] NCES, *America's Teachers.*

[88] National Education Association, *Status* p. 89.

[89] NCES, *America's Teachers*, p. 59.

[90] U.S Congress, Office of Technology Assessment, *Teachers and Technology: Making the Connection*, OTA-HR-616. Washington, D.C.: U.S. Government Printing Office, 1995..

[91] The Lighthouse Partnerships for Teacher Preparation and Recruiting New Teachers for Underserved Areas/Minority Recruitment Act (S.1209) would replace the current Title V.

[92] Ohio SB 230, adopted October 1996; Am. Sub. HB 215, adopted June 1997; Am. Sub. SB 55, adopted August 1997.

[93] Information compiled by the National Conference of State Legislatures, as of June 13, 1997.

Appendix A: State-by-State Report Card, Indicators of Attention to Teaching Quality, October 1997

			Investments in Teacher Quality				
State		Total Quality Indicators (out of 12)	Unqualified New Hires[1] (% of new hires who are unlicensed in their main field) (* ● 2% or less in either category)		Well-Qualified Teachers[2] (Average % of teachers in core academic fields with full certification and a major in their field) (* ● 80% or higher)	Out-of-Field Teaching[3] (% of math teachers without at least a minor in math) (* ● 20% or less)	Teachers as a % of Total Staff[4] (-/+ % from previous year) (* ● 60% or higher)
			All new hires	New entrants only			
Alabama	**	2	7%	5%	71%	25%	52.9% +
Alaska	*	1	5%	4%	52%	56%	49.1% +
Arizona		0	4%	4%	68%	25%	50.1% -
Arkansas	****	4	9%	19%	74%	30%	53.8% +
California	****	4	8%	12%	65%	46%	52.0% +
Colorado	****	4	3%	2% *	74%	26%	52.5% -
Connecticut	***	3	4%	0%† *	78%	23%	54.5% =
Delaware	*	1	12%	—	—	—	54.5% -
District of Columbia	***	3	17%	—	—	—	56.4% -
Florida	*	1	13%	16%	66%	30%	48.3% -
Georgia	***	3	4%	3%	76%	23%	48.2% -
Hawaii	***	3	23%	23%	64%	—	62.3% + *
Idaho	**	2	5%	4%	73%	34%	58.6% -
Illinois	*	1	7%	6%	73%	22%	54.3% +
Indiana	****	4	2%	1%† *	76%	25%	48.0% -
Iowa	******	6	2%	4% *	82% *	14% *	52.1% -
Kansas	*	1	3%	1% *	75%	22%	53.7% -
Kentucky	*****	5	7%	3%	71%	28%	46.3% -
Louisiana	*	1	23%	31%	64%	33%	50.5% +
Maine	**	2	4%	0% *	73%	29%	52.3% -
Maryland	**	2	13%	26%	70%	31%	54.4% -
Massachusetts	*	1	12%	15%	78%	29%	55.4% -
Michigan	****	4	3%	0% *	73%	28%	46.9% -
Minnesota	*******	7	5%	8%†	82% *	14% *	62.7% = *
Mississippi	***	3	4%	5%	77%	18% *	47.6% +
Missouri	**	2	5%	1% *	77%	09% *	48.0% -
Montana	***	3	3%	0% *	84% *	20% *	54.2% -
Nebraska	***	3	4%	0%† *	75%	26%	52.9% -
Nevada	**	2	5%	4%†	—	—	58.5% +
New Hampshire	**	2	17%	21%†	85% *	26%	53.3% -
New Jersey	**	2	2%	3%† *	68%	30%	53.2% +
New Mexico	*	1	8%	5%	68%	40%	48.7% -
New York	*	1	13%	23%	73%	26%	51.0% -
North Carolina	******	6	8%	9%	70%	23%	52.2% +
North Dakota	****	4	2%	0% *	83% *	18% *	54.3% -
Ohio	*****	5	2%	3% *	76%	25%	55.2% +
Oklahoma	****	4	1%	1% *	74%	31%	47.0% -
Oregon	***	3	7%	3%†	69%	36%	51.8% -
Pennsylvania	****	4	0%	0%† *	73%	17% *	53.0% -
Rhode Island	***	3	3%	—	—	—	63.5% - *
South Carolina	**	2	13%	11%	73%	19% *	53.3% +
South Dakota	**	2	4%	1% *	74%	25%	53.2% -
Tennessee	***	3	1%	0% *	69%	27%	54.0% +
Texas	*	1	13%	20%	70%	30%	52.0% =
Utah		0	7%	12%	70%	26%	53.6% -
Vermont	***	3	0%	— *	—	—	49.1% -
Virginia	*	1	12%	13%	77%	32%	54.4% -
Washington	***	3	2%	2% *	65%	51%	51.4% +
West Virginia	**	2	2%	— *	66%	39%	54.5% -
Wisconsin	****	4	1%	0% *	84% *	16% *	57.9% +
Wyoming	****	4	1%	1% *	76%	25%	51.2% -
US Average/Total			8%	11%	72%	28%	52% -

— Too few cases for reliable estimate

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Attention to Teacher Education & Development					Attention to Teaching Standards				
Professional Accreditation[5]	Student Teaching		New Teacher Induction[8]	Professional Development[9]	Professional Standards Board[10]	Nationally Certified Teachers[11]	Incentives for National Board Certification[12]		
% of teacher education programs in NCATE system)	# of required weeks[6]	Experience with diverse learners[7]	State-required and funded, with mentor training	(% of teachers who received > 8 hours of professional development)			Link to Licensing	Support for Professional Development	Financial Rewards
(• @ 80% or more)	(• @ ≥ 12 weeks)	(• with yes)	(• with yes)	(• with 60% or more)	(• with yes)	(• with 20 or more)	(• with at least two types of incentives)		
60%	12 •	no	no	39%	no	17	yes	yes	no •
0%	12 •	no	pending	55%	no	5	yes	no	no
0%	6-8•	no	no	44%	no	2	yes	no	no
100% •	12 •	yes •	no	43%	no	0	yes	yes	no •
19%	15 •	yes •	partial	58%	yes •	69 •	no	no	no
44%	—	yes •	partial	53%	no	23 •	yes	no	no
20%	10	no	yes •	46%	no	22 •	no	no	no
75%	9	no	no	46%	no	10	no	yes	yes •
71%	9	yes •	yes •	61% •	no	2	no	no	no
44%	12 •	no	partial	52%	no	17	no	no	no
65%	10	yes •	partial	47%	yes •	19	yes	yes	yes •
0%	9	no	no	63% •	yes •	0	no	no	no
83% •	10•	no	yes •	55%	no	1	no	no	no
31%	8	yes •	pending	36%	no	15	no	yes	no
89% •	10	no	yes •	33%	yes •	13	no	no	no
16%	12 •	no	no	48%	yes •	14	yes	yes	no •
59%	10	no	pending	42%	no	9	no	no	no
42%	12 •	no	yes •	72% •	yes[1] •	8	yes	no	yes •
74%	6-8•	yes •	partial	39%	no	5	no	no	no
33%	15 •	no	no	52%	no	2	no	no	no
27%	12 •	no	no	42%	no	0	yes	yes	no •
12%	5-6•	yes •	no	47%	no	7	no	yes	no
48%	8•	yes •	partial	40%	no	56 •	yes	yes	no •
77%	10-12•	yes •	piloting	50%	yes •	61 •	yes	yes	no •
67%	—	no	no	40%	no	26 •	no	yes	yes •
50%	—	no	partial	33%	no	1	no	no	no
63%	10•	no	no	54%	no	0	yes	no	no
81% •	14 •	no	no	43%	no	2	no	no	no
100% •	8	no	no	50%	yes[1] •	0	no	no	no
23%	—	yes •	no	59%	no	1	no	no	no
32%	16 •	no	partial	37%	no	13	no	no	no
63%	6-8•	no	partial	34%	no	54 •	yes	no	no
4%	—	no	piloting	43%	no	33 •	no	no	no
100% •	10	yes •	yes •	58%	yes[1] •	208 •	yes	yes	yes •
60%	10	no	piloting	45%	yes •	0	no	no	no
40%	10	yes •	yes •	38%	no	146 •	yes	yes	yes •
71%	12 •	no	partial	33%	yes •	0	yes	yes	yes •
19%	15 •	yes •	pending	49%	yes •	0	no	no	no
18%	12 •	no	yes •	37%	no	3	no	no	no
25%	12• •	yes •	no	37%	no	2	yes	no	no
43%	12 •	no	pending	38%	no	8	no	no	yes
58%	10	yes •	no	48%	no	0	no	no	no
43%	15 •	yes •	no	41%	no	1	no	no	no
15%	10	no	no	58%	yes[1] •	6	no	no	no
50%	10-12•	no	no	51%	no	1	no	no	no
8%	12 •	no	no	62% •	no	1	no	no	no
43%	10	no	no	45%	no	15	yes	yes	no •
55%	8	yes •	partial	60% •	no	10	no	no	no
79%	—	no	yes •	46%	no[2]	1	no	no	no
33%	18 •	no	no	48%	no	1	no	no	no
100% •	—	yes •	no	50%	yes •	0	no	no	no
40%	(19)	(19)	(9)	46%	(14)	(910)	(17)	(15)	(8)

Appendix A: State-by-State Report Card Notes

1. **Unqualified Hires**
   Percentage of newly hired teachers not licensed in their main assignment field. "All new hires" includes teachers who changed jobs (movers and transfers). "New entrants" are new hires who did not teach during the previous year and are usually newly licensed. (Source: U.S. Department of Education, National Center for Education Statistics, *1993-94 Schools and Staffing Surveys*, Tabulations conducted by the National Commission on Teaching & America's Future.)

2. **Well-Qualified Teachers**
   The average percentage of public high school teachers (grades 9-12) teaching English, mathematics, science, or social studies who hold full state certification and a college major in the field they teach. (Source: U.S. Department of Education, National Center for Education Statistics, *1993-94 Schools and Staffing Surveys*, Tabulations conducted by the National Commission on Teaching & America's Future.)

3. **Out-of-Field Teaching – % of Math Teachers Without At Least a Minor**
   The percentage of public high school teachers (grades 9-12) who taught one or more classes in mathematics without at least a minor in the field. (Source: U.S. Department of Education, National Center for Education Statistics, *1993-94 Schools and Staffing Survey*, Tabulations conducted by the National Commission on Teaching & America's Future.)

4. **Teachers as a Percent of Total Staff**
   Percentage of all school staff who are teachers, Fall 1995. (Source: U.S. Department of Education, National Center for Education Statistics, *Statistics in Brief—Public School Student, Staff, and Graduate Counts by State, School Year Fall 1995*, May 1997.)

5. **Professional Accreditation**
   The percentage of teacher education institutions that are in the National Council for the Accreditation of Teacher Education (NCATE) system of professional accreditation. Data derived from the National Association of State Directors of Teacher Education and Certification: *Manual on Certification and Preparation of Educational Personnel in the United States and Canada, 1997-98* and state education department officials. (Source: National Council for the Accreditation of Teacher Education, September 1997.)

6. **Number of Required Weeks of Student Teaching**
   Number of weeks of full-time student teaching required by the state. An (e) indicates an estimate based on required clock or college credit hours. May vary by grade level. (Source: National Association of State Directors of Teacher Education and Certification: *Manual on Certification and Preparation of Educational Personnel in the United States and Canada, 1997-98* and state education department officials).

7. **Student Teaching Experience Includes Teaching Special Needs Students in Diverse Settings**
   Whether or not a state requires that the student teaching experience includes work with diverse learners who are either special/exceptional students or in a multicultural setting. (Source: National Association of State Directors of Teacher Education and Certification, *Manual on Certification and Preparation of Educational Personnel in the United States and Canada, 1997-98*.)

8. **New Teacher Induction**
   Indicates whether or not a state requires that all new teachers participate in a formal induction or mentoring program that is state-funded and provides state or district training for mentors. States that provide or require such services only for some beginning teachers or that do not fund and train mentors are listed as having "partial" programs. (Developed from state-by-state survey of new teacher policies and practices conducted by *Education Week* and the National Commission for Teaching & America's Future, September 1997.)

9. **Professional Development**
   The percentage of public school teachers who received at least 9 hours of professional development in any of the following areas in 1993-94: subject matter, teaching methods, student assessment, cooperative learning, or use of technology. (Source: U.S. Department of Education, National Center for Education Statistics, *1993-94 Schools and Staffing Surveys*, Tabulations conducted by the National Commission on Teaching & America's Future.)

10. **Professional Standards Boards**
    Whether or not a state has established an independent professional teacher standards board to set standards for teacher education and licensing. An independent standards board has the authority to manage its own budget, set and enforce standards, and hire and direct its own staff. (1) A board that sets standards and has its own staff but does not have complete management or enforcement authority is semi-autonomous; (2) A board that was enacted but not implemented. (Source: National Education Association, *Teacher Licensure: Characteristics of Independent State Teacher Professional Standards Boards*, 1997.)

11. **Nationally Certified Teachers**
    Number of teachers certified by the National Board for Professional Teaching Standards. (Source: National Board for Professional Teaching Standards, October 1997.)

12. **Incentives for NBPTS Certification**
    Whether or not state policy has been established to: (1) link National Board Certification to licensing (e.g., portability, license renewal, or advanced certification status); (2) support participation in National Board assessments as a form of professional development; and (3) financially reward National Board-Certified teachers with increased compensation. (Source: National Board for Professional Teaching Standards, October 1997).

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Appendix B
Table 1 - Teacher Qualifications: Education and State Certification

	Percentage of teachers with master's degree or higher	Percentage of teachers by type of state certification in their main field								
		No Certification			Less than full[1]			Full[2]		
		All Teachers	Newly Hired Teachers (including transfers)	Newly Hired Teachers (excluding transfers)	All Teachers	Newly Hired Teachers (including transfers)	Newly Hired Teachers (excluding transfers)	All Teachers	Newly Hired Teachers (including transfers)	Newly Hired Teachers (excluding transfers)
U.S. Average	47.3	3.6	7.7	10.7	4.8	12.5	16.3	91.7	79.9	73.0
Alabama	60.9	3.2	7.2	5.3	1.4	2.5	4.8	95.6	90.3	89.9
Alaska	39.7	6.1	4.7	3.8	1.5	5.0	8.6	92.4	90.4	87.6
Arizona	48.1	2.2	3.6	3.9	9.1	16.8	20.5	88.8	79.7	75.6
Arkansas	34.8	2.7	9.3	18.7	1.7	2.0	3.4	95.8	88.8	77.9
California	40.5	5.0	8.0	11.6	7.7	17.6	25.0	87.4	74.4	63.4
Colorado	52.4	5.3	2.5	2.2	2.9	11.6	14.3	91.7	85.8	83.5
Connecticut	79.5	1.7	4.4	0.0 *	10.9	19.6	27.9 *	87.5	76.0	72.1 *
Delaware	53.6	4.8	11.5	—	5.1	20.6	—	90.2	68.0	—
District of Columbia	59.6	7.8	16.5	—	4.8	15.8	—	87.5	67.7	—
Florida	41.7	3.5	12.7	16.0	4.8	24.1	26.2	91.7	63.3	57.8
Georgia	50.2	3.2	4.2	3.1	3.7	15.9	11.3	93.1	79.9	85.7
Hawaii	50.4	11.8	22.5	23.4	3.1	6.5	2.1	85.0	71.1	74.4
Idaho	24.7	2.7	5.4	4.0	1.3	4.0	9.8	96.1	90.6	86.3
Illinois	49.9	4.8	6.5	5.5	2.3	6.9	5.5	93.0	86.6	88.9
Indiana	77.8	2.0	2.1	0.9 *	2.2	4.6	5.8 *	95.9	93.4	93.3 *
Iowa	32.6	3.4	2.1	3.7	5.7	30.5	45.8	91.0	67.4	50.5
Kansas	46.1	0.9	2.9	1.4	0.7	3.8	8.8	98.5	93.4	89.9
Kentucky	76.4	3.9	7.4	3.0	7.6	23.5	36.2	88.6	69.2	60.8
Louisiana	38.6	7.4	22.8	31.4	3.6	7.9	14.8	89.0	69.5	53.8
Maine	30.2	4.0	4.2	0.0 *	4.5	29.5	33.5 *	91.5	66.3	66.6 *
Maryland	56.0	4.6	12.8	25.7	2.9	5.8	7.3	92.6	81.4	67.0
Massachusetts	59.6	5.7	11.9	15.4	1.3	1.8	2.3	93.0	85.8	82.4
Michigan	53.7	0.7	3.2	0.0	10.4	16.9	40.4	88.9	79.9	59.6
Minnesota	36.7	2.0	5.1	7.8 *	1.4	5.5	12.8 *	96.7	89.4	79.5 *
Mississippi	42.0	3.3	4.1	5.1	3.7	12.5	17.4	92.9	83.4	77.5
Missouri	45.4	2.0	4.6	1.4	3.6	11.9	21.4	94.4	83.6	77.1
Montana	28.3	1.5	2.8	0.0	2.1	5.4	6.5	96.4	91.8	93.5
Nebraska	38.3	1.5	4.2	0.0 *	1.3	3.0	16.1 *	97.3	87.8	83.9 *
Nevada	49.2	1.8	4.5	3.5 *	3.3	8.4	12.5 *	94.8	87.1	84.0 *
New Hampshire	39.3	4.4	17.0	20.7 *	4.8	8.7	4.5 *	90.8	74.3	74.8 *
New Jersey	43.5	2.7	1.7	3.4 *	1.4	8.8	5.3 *	95.8	89.4	91.3 *
New Mexico	46.3	3.7	8.4	5.1	2.0	6.9	12.6	94.2	84.8	82.3
New York	74.9	6.8	13.0	23.3	9.2	31.2	31.3	84.0	55.9	45.4
North Carolina	36.4	3.6	7.7	9.2	3.4	13.0	22.3	93.1	79.3	68.5
North Dakota	19.7	1.0	2.4	0.0	2.1	8.1	8.8	97.0	89.6	91.2
Ohio	45.5	1.9	2.2	3.3	9.6	22.5	17.6	88.5	75.4	79.1
Oklahoma	43.0	1.1	0.7	0.6	2.9	10.2	13.1	96.2	89.2	86.3
Oregon	47.9	3.1	6.5	3.0 *	2.5	7.6	8.5 *	94.4	86.0	88.6 *
Pennsylvania	52.8	1.4	0.0	0.0 *	4.3	9.3	15.7 *	94.4	90.6	84.3 *
Rhode Island	60.0	0.3	2.6	—	4.5	8.0	—	95.3	89.4	—
South Carolina	50.0	5.0	12.9	10.7	1.7	1.9	3.9	93.3	85.3	85.4
South Dakota	24.7	1.4	3.9	1.4	1.5	6.7	13.8	97.1	89.4	84.8
Tennessee	48.0	2.1	1.1	0.0	1.8	5.2	6	96.3	93.8	99.4
Texas	29.5	4.1	12.7	19.9	6.9	11.2	13.6	89.0	76.2	66.4
Utah	28.2	3.0	7.3	11.7	2.2	4.8	7.4	94.9	87.9	80.8
Vermont	49.6	1.2	0.0	—	0.6	0.0	—	98.2	100.0	—
Virginia	34.2	4.3	11.7	13.2	2.4	7.7	15.5	93.3	80.7	71.4
Washington	42.1	3.2	2.4	1.6	1.5	1.9	4.1	95.5	95.8	94.3
West Virginia	57.5	1.6	2.1	—	4.2	8.2	—	94.4	89.8	—
Wisconsin	40.5	2.5	0.7	0.0	1.7	7.3	7.5	95.8	92.0	92.5
Wyoming	28.3	1.3	0.6	1.4	0.3	1.0	2.5	98.5	98.4	96.1

— Too few cases for reliable estimate

* Interpret with caution due to small sample size

1 Less-than-full certification includes emergency, temporary, alternative, and provisional licenses that require additional coursework or represent a lower standard than a regular certificate.

2 Full certification includes regular and advanced licenses and probationary licenses granted to beginning teachers who have completed all requirements except a probationary period.

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Surveys. Tabulations conducted by the National Commission on Teaching & America's Future.

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Table 2 – Teacher Qualifications: In-Field Preparation

Percentage of Public High School Teachers (grades 9-12) with Full-State Certification and a Major in the Field They Teach, by Field

	Math	Science	Social Studies	English	Foreign Lang.	Vocational Ed.	Art/ Music	Physical Ed.	Life Science[1]	Physical Science[1]
U.S. Average	67.3	75.7	72.8	72.7	79.7	74.3	72.4	78.0	59.6	34.8
Alabama	73.6	72.8	67.4	70.7	71.6	82.4	78.8	71.2	42.3	29.0
Alaska	39.1	61.7	57.4	51.5	—	68.4	40.5	36.1	—	17.8
Arizona	65.8	71.2	70.3	63.7	—	71.3	73.8	72.8	—	—
Arkansas	63.4	85.5	79.4	68.9	—	84.8	81.3	83.7	65.0	25.0
California	49.0	71.0	71.1	66.9	63.6	68.7	53.2	66.3	60.8	40.0
Colorado	65.2	84.1	69.1	79.3	73.8	54.4	74.5	68.0	63.4	44.8
Connecticut	73.2	83.6	77.6	76.4	80.6	70.1	73.3	—	—	66.9
Delaware	—	—	—	—	—	—	—	—	—	—
District of Columbia	—	—	—	—	—	—	—	—	—	—
Florida	67.3	69.4	65.4	61.6	—	65.0	90.9	88.9	62.6	38.8
Georgia	70.9	78.4	82.5	73.1	77.2	73.2	64.1	88.2	67.4	14.4
Hawaii	—	—	—	—	—	—	—	—	—	—
Idaho	65.6	76.7	67.4	83.0	63.3	87.0	78.8	79.2	52.2	22.9
Illinois	76.2	70.6	70.3	73.0	—	77.4	74.4	93.9	61.0	—
Indiana	74.2	80.6	71.1	79.6	89.5	84.1	84.6	85.1	—	47.0
Iowa	81.0	85.0	82.2	80.6	89.6	83.8	80.3	68.0	—	57.6
Kansas	72.2	81.8	68.2	79.2	—	87.5	85.8	79.4	60.1	40.6
Kentucky	64.5	72.4	74.3	70.7	—	71.1	81.5	—	—	32.8
Louisiana	59.7	60.8	60.5	72.9	—	87.4	73.6	85.3	39.5	21.8
Maine	68.6	75.6	75.0	72.2	—	75.8	65.1	—	—	23.6
Maryland	63.4	77.3	73.5	66.2	—	73.3	79.0	—	58.1	—
Massachusetts	69.4	83.6	74.7	83.3	91.3	59.0	58.7	89.1	66.1	51.0
Michigan	68.1	74.6	73.6	76.9	—	73.5	78.3	82.0	61.8	35.7
Minnesota	82.0	89.0	80.6	75.1	85.2	83.5	77.8	88.2	—	29.6
Mississippi	75.9	73.7	84.9	72.0	—	69.8	77.6	50.1	51.4	18.8
Missouri	83.6	72.6	73.6	76.3	75.1	80.2	70.3	78.5	—	42.3
Montana	80.5	85.6	88.1	80.7	72.6	87.1	78.4	78.2	53.6	31.5
Nebraska	72.5	80.1	73.5	73.9	—	87.5	89.1	63.7	—	30.2
Nevada	—	—	—	—	—	—	—	—	—	—
New Hampshire	67.8	—	—	77.9	—	—	—	—	—	—
New Jersey	67.7	67.1	71.0	67.5	87.2	65.9	76.6	78.3	—	21.3
New Mexico	56.8	79.0	66.6	70.3	—	70.1	71.1	69.0	—	—
New York	64.9	73.2	78.7	74.9	86.5	75.2	78.1	88.1	56.2	41.8
North Carolina	73.7	71.9	63.0	71.1	—	69.7	73.2	80.2	59.7	26.1
North Dakota	78.3	86.6	82.1	82.9	80.1	85.0	91.2	66.9	53.6	21.7
Ohio	68.0	82.9	71.4	79.9	88.1	72.4	65.6	71.5	—	36.3
Oklahoma	66.3	76.6	77.4	75.6	58.3	89.7	75.0	69.2	51.9	23.1
Oregon	63.2	81.8	69.4	63.3	59.2	75.6	55.8	78.9	63.9	35.2
Pennsylvania	78.6	78.2	68.5	64.6	87.0	75.9	80.2	84.7	—	36.7
Rhode Island	—	—	—	—	—	—	—	—	—	—
South Carolina	76.7	65.6	71.4	80.0	—	57.6	—	—	—	—
South Dakota	73.7	81.9	68.0	73.8	74.0	87.9	91.2	73.9	56.1	34.3
Tennessee	71.8	70.7	68.8	64.9	91.0	67.8	63.1	78.8	55.2	20.1
Texas	61.8	72.0	73.8	73.2	79.5	67.9	62.9	67.7	65.8	23.4
Utah	72.3	70.4	63.9	72.7	76.5	77.0	71.7	64.4	54.1	29.4
Vermont	—	—	—	—	—	—	—	—	—	—
Virginia	62.9	88.8	73.5	83.9	—	72.5	—	—	—	—
Washington	48.2	79.7	65.4	66.2	74.2	68.2	57.1	64.4	54.6	22.6
West Virginia	59.2	70.2	70.4	65.7	—	73.2	74.6	87.2	61.4	—
Wisconsin	83.8	83.4	82.5	87.0	79.2	90.4	85.1	89.4	61.4	58.8
Wyoming	73.7	82.0	75.6	73.7	—	86.1	65.6	83.8	—	—

— Too few cases for reliable estimate

[1] These estimates represent the proportion of teachers without a state certificate and a major in the particular subfields of life, science or physical science.

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Survey (Public School Teacher Questionnaire). Tabulations conducted by the National Commission on Teaching & America's Future.

Table 3 – Teacher Qualifications: Out-of-Field Teaching

Percentage of Public High School Teachers (grades 9-12) with Less Than a Minor in the Field They Teach, by Field

	Math	Science	Social Studies	English	Foreign Lang.	Vocational Ed.	Art/ Music	Physical Ed.	Life Science[1]	Physical Science[1]	History[1]
U.S. Average	28.1	18.2	17.8	21.5	13.7	18.0	20.4	14.6	31.2	54.7	51.8
Alabama	25.0	22.7	24.1	24.4	18.9	9.1	15.4	20.3	55.6	67.9	55.9
Alaska	55.7	32.3	28.4	38.6	—	29.5	48.7	60.0	—	71.8	58.4
Arizona	24.9	14.6	22.2	25.2	—	21.2	15.6	17.0	—	—	44.6
Arkansas	30.0	9.9	16.7	27.0	—	12.4	11.6	10.5	30.9	58.8	67.2
California	46.4	22.6	13.3	24.8	26.9	19.1	37.8	25.4	30.7	52.0	46.9
Colorado	26.3	12.7	23.6	15.0	16.1	35.6	17.6	21.6	24.2	48.1	51.8
Connecticut	23.3	11.7	13.6	20.2	3.6	22.6	16.0	—	—	27.9	35.0
Delaware	—	—	—	—	—	—	—	—	—	—	—
District of Columbia	—	—	—	—	—	—	—	—	—	27.2	—
Florida	29.9	27.2	19.9	35.6	—	24.6	9.1	2.5	35.1	52.4	67.6
Georgia	23.0	18.3	14.2	22.4	16.6	22.2	18.1	11.8	26.6	66.4	49.2
Hawaii	—	—	—	—	—	—	—	—	—	—	—
Idaho	34.4	20.0	26.9	13.2	30.3	11.5	17.2	11.5	38.7	65.1	58.1
Illinois	22.1	22.1	26.2	18.0	—	13.1	21.9	4.4	39.0	—	47.1
Indiana	24.5	14.5	20.2	15.8	8.0	11.9	8.0	7.9	—	37.0	59.1
Iowa	14.0	13.4	16.6	16.1	6.6	9.6	9.8	26.0	—	35.4	62.4
Kansas	22.1	17.0	23.9	20.8	—	9.9	10.1	16.5	31.3	54.1	59.6
Kentucky	28.3	15.9	17.0	27.2	—	21.7	18.5	—	—	40.1	30.9
Louisiana	33.0	30.4	25.6	15.2	—	7.8	19.7	2.2	49.0	66.2	65.7
Maine	29.4	20.5	14.9	22.3	—	19.8	28.4	—	—	58.5	51.9
Maryland	31.0	17.1	18.0	31.7	—	19.6	11.4	—	33.7	—	41.3
Massachusetts	29.2	13.5	15.6	14.5	7.6	35.2	37.3	10.9	27.6	48.0	45.6
Michigan	28.0	10.5	9.1	14.4	—	14.6	8.9	13.9	19.9	47.5	43.9
Minnesota	14.3	9.3	7.8	23.6	9.9	7.5	16.0	6.7	—	52.9	49.3
Mississippi	18.3	20.9	9.8	23.3	—	21.9	13.3	31.1	[illegible]	72.2	56.3
Missouri	9.3	21.2	19.3	16.5	18.5	14.3	23.2	21.5	—	43.4	66.7
Montana	19.5	11.9	8.2	15.6	21.0	5.5	15.3	5.9	28.7	61.8	53.3
Nebraska	26.3	17.0	17.8	24.3	—	10.8	9.0	23.0	—	54.8	68.9
Nevada	—	—	—	—	—	—	—	—	—	—	—
New Hampshire	25.9	—	—	13.5	—	—	—	—	—	—	—
New Jersey	29.8	27.5	19.5	27.8	10.2	23.1	23.4	18.0	—	77.2	53.1
New Mexico	39.9	21.0	24.6	23.0	—	28.0	28.9	22.7	—	—	59.5
New York	25.6	14.5	14.0	19.5	10.5	15.1	12.5	2.5	22.3	50.6	51.5
North Carolina	23.2	22.9	24.6	24.5	—	28.5	23.3	17.6	37.6	66.3	55.9
North Dakota	17.8	6.0	12.7	14.9	15.6	11.4	6.7	24.7	26.6	67.8	57.4
Ohio	25.2	14.0	17.7	18.3	7.4	16.7	19.4	11.1	—	56.6	62.8
Oklahoma	31.1	16.1	16.2	18.0	30.3	3.9	16.6	18.4	41.7	61.7	52.7
Oregon	35.9	13.2	19.5	30.6	22.7	19.5	31.2	17.6	30.9	46.3	46.9
Pennsylvania	17.2	17.0	21.1	29.7	5.0	12.6	11.4	9.7	38.1	53.9	65.0
Rhode Island	—	—	—	—	—	—	—	—	—	—	—
South Carolina	18.8	23.1	23.7	15.7	—	35.3	—	—	—	—	53.9
South Dakota	24.8	15.4	23.8	22.7	21.0	7.2	8.8	20.3	33.3	55.2	65.9
Tennessee	27.0	27.6	17.0	27.9	9.0	25.3	35.5	13.5	41.9	64.5	46.9
Texas	29.8	21.7	17.4	17.8	11.0	22.3	27.9	18.6	23.5	67.2	37.3
Utah	26.3	22.7	14.0	21.1	6.5	13.5	25.5	23.8	40.2	51.7	36.1
Vermont	—	—	—	—	—	—	—	—	—	—	—
Virginia	32.3	8.7	17.1	14.4	—	22.4	—	—	—	—	—
Washington	50.8	13.2	24.2	23.0	19.4	20.5	36.1	28.1	29.2	67.0	47.4
West Virginia	39.3	26.1	19.7	29.4	—	16.8	22.2	12.8	33.0	—	84.2
Wisconsin	16.2	16.6	14.4	10.8	17.9	9.4	12.2	10.6	29.2	32.8	35.9
Wyoming	24.9	16.1	16.8	19.9	—	12.7	25.6	10.3	—	—	—

— Too few cases for reliable estimate

[1] These estimates represent the proportion of teachers without a major or a minor in the particular subfields of life science, physical science, or history.

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Survey (Public School Teacher Questionnaire). Tabulations conducted by the National Commission on Teaching & America's Future.

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Table 4 – District Hiring Requirements

Percentage of Public School Districts Requiring Selected Credentials When Screening Teacher Applicants

	Full Standard State Certification for Field	Graduation from State-Approved Teacher Education Program	College Major or Minor in the Field to be Taught
U.S. Average	83.3	71.9	66.9
Alabama	86.9	89.8	88.2
Alaska	66.4	71.0	22.1
Arizona	85.3	59.3	64.9
Arkansas	63.5	84.7	62.8
California	78.0	63.0	44.7
Colorado	77.2	55.7	69.7
Connecticut	95.2	72.0	56.8
Delaware	52.9	52.9	70.6
District of Columbia	100.0	0.0	100.0
Florida	58.0	36.3	27.1
Georgia	46.0	42.3	46.8
Hawaii	100.0	100.0	0.0
Idaho	88.7	75.1	62.4
Illinois	88.3	72.4	69.2
Indiana	88.2	80.5	80.6
Iowa	77.5	75.5	64.6
Kansas	89.7	80.6	75.4
Kentucky	93.5	95.2	92.6
Louisiana	78.7	78.2	60.0
Maine	87.6	59.2	67.2
Maryland	64.5	37.7	57.6
Massachusetts	89.9	41.5	59.7
Michigan	94.6	89.8	90.0
Minnesota	92.3	80.8	90.4
Mississippi	91.2	76.3	70.3
Missouri	64.6	86.9	68.7
Montana	85.7	73.8	77.7
Nebraska	89.3	83.7	69.0
Nevada	72.2	66.7	72.2
New Hampshire	85.0	55.4	70.7
New Jersey	88.4	37.4	44.0
New Mexico	74.8	85.4	70.9
New York	95.4	61.8	66.1
North Carolina	64.3	58.1	67.4
North Dakota	95.7	81.7	96.3
Ohio	97.0	84.9	78.1
Oklahoma	69.8	76.9	73.6
Oregon	72.7	74.1	39.3
Pennsylvania	97.6	73.6	81.7
Rhode Island	100.0	67.6	70.3
South Carolina	84.4	80.6	51.3
South Dakota	89.2	80.5	70.2
Tennessee	93.2	77.2	47.6
Texas	63.4	75.9	54.3
Utah	74.2	72.6	58.8
Vermont	98.3	55.3	63.7
Virginia	71.3	40.3	52.1
Washington	80.9	75.4	51.4
West Virginia	81.3	87.1	68.5
Wisconsin	84.6	80.0	90.0
Wyoming	85.7	57.8	69.0

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Survey (Public School District Questionnaire). Tabulations conducted by the National Commission on Teaching & America's Future.

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Table 5 – Public School Teachers' Access to Professional Development

	Percentage of beginning teachers who experienced an induction program[1]	Percentage of teachers receiving different types of professional development by number of hours									
		Subject Matter		Teaching Methods		Technology		Student Assessment		Cooperative Learning	
		None	9+ hours	None	9+ hours	None	9+ hours	None	9+ hours	None	9+ hours
U.S. Average	55	70	15	36	28	51	15	49	11	49	13
Alabama	41	67	15	30	24	57	11	48	08	49	09
Alaska	20	64	20	36	33	37	21	51	11	58	11
Arizona	50	73	14	44	23	55	13	48	12	59	10
Arkansas	22	72	13	32	30	66	10	53	08	52	09
California	58	61	24	23	40	47	15	32	18	47	14
Colorado	45	67	19	42	30	45	20	43	19	61	11
Connecticut	76	61	18	28	27	52	15	38	11	48	10
Delaware	59	70	13	36	24	53	10	43	16	53	09
District of Columbia	65	62	24	32	29	42	28	48	15	31	26
Florida	90	70	12	33	28	37	20	54	13	47	19
Georgia	62	75	11	40	26	55	18	63	08	51	13
Hawaii	41	60	24	32	41	44	23	47	16	38	28
Idaho	68	71	18	39	35	60	15	60	15	57	18
Illinois	38	77	10	47	16	58	10	43	12	57	12
Indiana	84	78	11	44	16	48	13	61	07	54	07
Iowa	35	72	16	43	25	43	15	44	14	58	12
Kansas	35	71	14	37	18	42	15	46	12	52	07
Kentucky	88	63	17	25	41	25	28	13	38	27	19
Louisiana	31	71	12	32	25	59	11	53	09	49	11
Maine	70	71	20	43	32	63	14	52	15	49	14
Maryland	51	77	12	35	26	52	15	46	09	41	14
Massachusetts	14	69	17	39	28	59	15	56	11	47	15
Michigan	31	74	12	38	26	56	10	49	08	52	13
Minnesota	45	68	18	36	31	47	15	50	15	56	11
Mississippi	27	69	11	34	21	57	11	32	13	35	13
Missouri	83	76	11	44	18	55	10	57	07	56	08
Montana	18	72	18	40	31	44	18	56	12	54	14
Nebraska	32	76	11	44	18	45	14	53	11	59	12
Nevada	27	67	20	34	33	68	14	61	11	56	17
New Hampshire	27	54	25	29	40	51	14	48	16	42	18
New Jersey	40	73	12	35	20	51	11	51	10	50	12
New Mexico	51	76	11	45	17	56	10	56	08	48	10
New York	51	76	14	44	24	62	14	56	11	55	15
North Carolina	83	68	19	30	34	45	22	42	15	43	19
North Dakota	16	71	15	43	28	48	17	65	08	61	09
Ohio	55	71	14	40	24	61	8	55	10	52	12
Oklahoma	82	72	13	35	20	53	8	46	06	42	08
Oregon	36	70	17	37	28	54	15	45	13	62	12
Pennsylvania	81	76	11	44	20	58	10	51	10	50	13
Rhode Island	03	78	11	43	23	64	11	53	09	51	10
South Carolina	50	74	11	39	24	58	11	55	08	46	12
South Dakota	25	73	12	45	24	38	21	56	11	53	11
Tennessee	46	75	10	34	23	45	18	50	07	51	08
Texas	62	80	20	25	37	38	18	43	12	34	17
Utah	75	65	19	33	32	41	19	58	10	49	12
Vermont	21	66	24	39	35	48	18	51	21	63	13
Virginia	58	71	14	38	27	50	14	53	10	47	12
Washington	50	64	24	38	35	36	28	50	16	54	15
West Virginia	45	71	14	34	29	51	17	46	10	43	13
Wisconsin	44	71	17	42	28	50	16	54	11	64	11
Wyoming	20	70	16	48	25	46	20	54	11	58	12

[1] Percentage of teachers with 5 or fewer years of teaching experience who experienced a formal induction program.

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Survey (Public School Teachers Questionnaire). Tabulations conducted by the National Commission on Teaching & America's Future.

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Table 6 – Supply and Demand Indicators

Percentage of Schools Reporting Difficulty Filling Vacancies[1] in Selected Teaching Fields

		Secondary Schools[3]					
	Elementary[2]	Math	Physical Science	Biology	English	Special Education[4]	English as a Second Language
U.S. Average	3.0	16.9	16.1	12.4	9.8	18.3	5.8
Alabama	7.2	9.0	7.7	7.7	8.2	18.6	0.4
Alaska	2.6	10.0	9.5	6.8	4.9	13.9	6.3
Arizona	4.7	28.6	16.1	14.3	21.5	27.7	17.2
Arkansas	10.2	12.1	19.0	14.9	9.2	17.6	2.3
California	10.3	22.6	22.4	17.0	14.1	22.3	18.0
Colorado	6.7	11.6	12.7	13.7	8.0	21.3	8.8
Connecticut	7.4	4.3	10.7	5.5	6.1	10.3	3.4
Delaware	16.8	—	—	—	—	28.5	1.5
District of Columbia	36.6	—	—	—	—	10.1	1.5
Florida	5.7	17.5	14.6	19.7	7.9	37.0	7.1
Georgia	3.2	30.6	32.1	26.4	11.1	28.3	0.9
Hawaii	—	—	—	—	—	52.1	0.9
Idaho	5.7	21.6	8.8	12.0	12.1	19.6	10.5
Illinois	8.5	12.9	9.9	12.0	7.3	15.7	3.2
Indiana	0.0	5.9	3.6	4.7	10.2	6.5	1.0
Iowa	1.5	5.1	9.4	3.8	8.4	17.8	2.4
Kansas	1.3	15.6	14.3	13.6	13.9	8.1	1.9
Kentucky	0.5	16.8	13.2	11.9	11.5	20.7	0.3
Louisiana	20.2	20.1	19.8	16.4	17.4	29.4	3.6
Maine	3.3	14.4	18.6	14.0	1.6	14.9	2.2
Maryland	19.3	17.5	23.7	13.8	13.4	14.5	1.5
Massachusetts	4.8	18.4	20.6	15.2	2.6	14.3	7.9
Michigan	3.0	9.5	8.0	2.7	0.0	6.2	0.0
Minnesota	5.9	15.6	19.6	6.4	3.6	21.4	8.0
Mississippi	16.9	23.2	18.2	24.0	12.8	29.7	2.5
Missouri	1.2	19.9	15.1	16.9	14.5	25.1	1.2
Montana	1.9	9.9	7.8	10.5	12.6	10.6	1.0
Nebraska	6.4	13.9	11.6	8.9	2.0	8.1	2.4
Nevada	3.0	17.9	21.6	22.1	12.5	31.0	14.1
New Hampshire	1.8	18.1	20.7	6.1	18.0	28.6	7.4
New Jersey	5.5	15.0	19.6	12.5	7.5	13.2	3.7
New Mexico	13.0	32.1	21.1	14.0	6.6	37.3	19.0
New York	8.0	13.4	12.1	11.9	6.2	10.8	4.7
North Carolina	8.7	28.4	30.2	23.7	18.3	25.3	4.4
North Dakota	3.3	12.7	15.9	14.0	7.6	8.7	0.7
Ohio	4.1	11.2	18.3	4.5	6.7	11.7	1.9
Oklahoma	5.7	13.9	11.0	8.2	12.0	17.0	2.8
Oregon	3.0	17.7	16.5	9.2	11.1	7.6	2.3
Pennsylvania	4.7	3.5	28.4	15.5	1.9	13.1	2.3
Rhode Island	0.8	—	—	—	—	5.9	1.9
South Carolina	10.5	18.2	12.4	12.1	8.7	20.3	0.9
South Dakota	3.5	12.9	9.5	6.5	8.3	17.8	1.7
Tennessee	9.1	22.5	12.7	14.4	9.3	15.9	2.1
Texas	11.8	37.6	22.2	17.0	16.9	26.8	13.4
Utah	5.0	22.4	23.0	10.0	12.7	11.3	10.7
Vermont	6.6	—	—	—	—	17.5	5.0
Virginia	9.6	11.0	11.9	13.4	8.2	23.0	6.3
Washington	12.2	16.0	9.9	9.8	14.2	17.6	10.9
West Virginia	3.2	2.2	4.7	8.7	2.2	8.2	0.3
Wisconsin	0.2	14.1	14.4	5.9	7.8	18.0	1.0
Wyoming	0.0	15.9	10.5	5.3	10.2	18.2	5.1

— Too few cases for reliable estimate

1 Percentage of schools reporting that it was somewhat difficult, very difficult, or impossible to fill vacanices. 2 Percentage of schools serving students in grades K-6 reporting difficulty filling elementary teacher vacanices. 3 Percentage of schools serving students in grades 7-12 reporting difficulty filling vacancies in selected fields. 4 Percentage of schools serving students in grades K-12 reporting difficulty filling vacanices in special education and in bilingual education / English as a Second Language.

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Survey (Public School Teacher and School Questionnaires). Tabulations conducted by the National Commission on Teaching & America's Future.

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Table 7 – Supply and Demand Indicators: Incentives in Shortage Fields

Percentage of Public School Districts Offering Financial Incentives or Free Retraining in Shortage Fields, by Field

	Mathematics	Physical Science	Life Science	Special Education	English as a Second Language
U.S. Average	14	11	11	17	12
Alabama	11	11	13	11	3
Alaska	19	13	17	25	12
Arizona	14	9	10	19	22
Arkansas	11	10	10	16	8
California	17	15	14	20	39
Colorado	2	0	0	4	6
Connecticut	2	0	0	5	0
Delaware	29	35	29	24	24
District of Columbia	0	0	0	100	0
Florida	23	23	23	56	54
Georgia	37	33	33	54	18
Hawaii	100	100	100	100	0
Idaho	19	17	16	14	9
Illinois	9	7	8	11	6
Indiana	7	8	6	5	3
Iowa	13	13	13	16	5
Kansas	10	11	10	9	7
Kentucky	9	5	7	11	2
Louisiana	20	16	20	29	13
Maine	20	18	18	18	13
Maryland	10	10	10	25	5
Massachusetts	6	4	4	7	1
Michigan	21	20	20	26	17
Minnesota	6	9	7	9	4
Mississippi	30	22	26	22	4
Missouri	9	7	8	11	4
Montana	9	8	10	13	7
Nebraska	8	7	7	9	8
Nevada	6	0	0	28	11
New Hampshire	5	7	4	12	4
New Jersey	20	7	3	16	8
New Mexico	14	8	8	9	23
New York	5	6	5	12	8
North Carolina	22	23	22	36	13
North Dakota	21	12	14	10	5
Ohio	9	7	7	9	5
Oklahoma	11	8	8	25	9
Oregon	17	11	14	30	12
Pennsylvania	13	13	12	14	8
Rhode Island	9	9	9	14	5
South Carolina	32	27	23	32	3
South Dakota	19	14	15	18	11
Tennessee	23	18	19	19	2
Texas	29	21	24	25	34
Utah	37	30	25	43	11
Vermont	10	7	6	11	3
Virginia	15	12	16	48	8
Washington	22	18	18	24	21
West Virginia	4	8	4	18	4
Wisconsin	6	6	5	16	3
Wyoming	8	8	11	8	3

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Survey (Public School District Questionnaire). Tabulations conducted by the National Commission on Teaching & America's Future.

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Table 8 – Supply and Demand Indicators

Rates of and Reasons for Public School Teacher Attrition

	% of teachers who moved or left teaching[1]		Of those who moved or left		% of Teachers Over 50 Years of Age[2]
	% who moved to another school	% who left teaching	% who retired	% who left due to dissatisfaction, salary, or career change	
U.S. Average	7.3	5.1	13.6	50.2	24.8
Alabama	6.0	4.1	24.4	61.3	20.2
Alaska	14.6	9.5	5.4	45.1	18.1
Arizona	4.4	4.8	8.8	45.2	22.7
Arkansas	6.6	4.7	4.7	57.2	19.6
California	8.4	7.2	21.2	40.2	33.0
Colorado	4.2	7.4	15.3	84.8	25.8
Connecticut	14.4	3.1	—	—	28.4
Delaware	4.7	10.9	51.0	36.5	24.6
District of Columbia	—	—	—	—	41.4
Florida	9.1	5.9	7.3	41.3	25.0
Georgia	7.7	4.6	7.9	65.4	20.7
Hawaii	24.8	2.1	1.4	20.9	28.2
Idaho	3.8	3.5	13.6	53.0	20.5
Illinois	5.9	4.4	11.0	50.1	24.3
Indiana	6.7	2.7	10.9	15.9	25.7
Iowa	4.6	4.5	20.1	70.4	26.4
Kansas	15.8	4.7	8.9	43.0	23.2
Kentucky	5.9	3.4	11.7	57.0	16.7
Louisiana	6.4	8.1	26.4	53.9	21.1
Maine	3.4	2.8	12.3	53.3	25.0
Maryland	7.5	14.5	—	—	22.7
Massachusetts	8.0	3.9	7.9	18.2	28.8
Michigan	2.7	2.5	17.0	48.2	30.1
Minnesota	6.3	3.4	9.3	61.5	27.7
Mississippi	5.0	3.6	16.5	54.8	21.7
Missouri	8.3	5.9	15.3	53.8	20.9
Montana	10.2	2.7	6.1	50.5	19.5
Nebraska	4.2	5.5	13.9	46.4	21.4
Nevada	29.0	1.5	1.1	79.2	25.5
New Hampshire	—	—	—	—	23.2
New Jersey	4.6	2.7	7.5	29.9	34.2
New Mexico	10.5	3.6	10.1	51.7	21.7
New York	4.4	6.1	29.1	47.4	27.5
North Carolina	8.1	5.6	10.8	62.2	20.0
North Dakota	3.5	2.4	9.5	33.8	19.5
Ohio	5.0	5.8	31.2	54.1	22.5
Oklahoma	7.2	3.4	14.5	79.2	18.8
Oregon	6.6	3.6	18.0	46.9	26.8
Pennsylvania	10.2	3.7	12.7	36.9	26.1
Rhode Island	—	—	—	—	23.5
South Carolina	12.3	8.4	2.2	45.5	18.8
South Dakota	1.1	13.1	2.5	14.9	21.0
Tennessee	5.3	5.7	24.8	35.0	25.4
Texas	8.2	4.4	9.0	79.6	20.6
Utah	1.0	4.1	24.4	38.9	28.1
Vermont	—	—	—	—	23.8
Virginia	8.8	7.5	17.7	40.6	21.8
Washington	8.3	5.7	12.1	43.1	24.4
West Virginia	21.3	3.1	0.4	26.3	21.8
Wisconsin	8.1	4.3	5.1	55.7	26.4
Wyoming	6.5	3.0	13.1	81.5	23.5

— Too few cases for reliable estimate

[1] Source: National Center for Education Statistics, 1993-94 Schools and Staffing Surveys (Teacher Follow-Up Survey, 1991-92). Tabulations conducted by the National Commission on Teaching & America's Future. [2] Source: National Center for Education Statistics, *America's Teachers : Profile of a Profession, 1993-94*, Table A2.9.

Table 9 – Public School Teacher Salaries and Satisfaction with Teaching

	Salary Range[1]		Satisfaction with Teaching		
	Bachelor's degree, no experience	Highest step on schedule	% who would certainly become a teacher again[2]	% who plan to stay in teaching as long as they are able[2]	% of teachers satisfied with class size[3]
U.S. Average	21,923	40,517	38.0	32.6	64.5
Alabama	22,263	32,840	39.8	28.4	67.3
Alaska	31,374	58,095	46.2	31.5	68.9
Arizona	21,890	40,661	36.5	33.3	60.5
Arkansas	19,603	29,685	33.4	29.1	78.8
California	24,404	46,272	39.7	38.2	42.5
Colorado	19,937	37,316	38.2	35.7	64.6
Connecticut	28,195	56,189	45.8	39.1	76.4
Delaware	22,914	47,743	35.5	33.6	57.7
District of Columbia	22,000	54,000	38.5	26.5	69.9
Florida	21,838	39,599	32.0	34.1	51.7
Georgia	20,065	42,134	40.7	28.3	69.8
Hawaii	25,436	49,199	35.0	29.6	61.2
Idaho	18,102	33,128	39.3	28.6	58.7
Illinois	21,415	42,004	43.4	34.2	68.8
Indiana	22,560	41,993	39.4	35.3	67.6
Iowa	18,796	33,317	37.7	27.7	67.4
Kansas	22,714	36,671	34.2	30.9	74.9
Kentucky	21,135	36,743	32.5	25.3	69.3
Louisiana	18,045	30,539	30.3	33.5	63.5
Maine	19,566	36,814	37.7	36.2	75.3
Maryland	24,833	48,158	29.7	32.3	63.9
Massachusetts	23,108	44,783	40.9	36.9	67.1
Michigan	24,705	48,315	43.9	31.8	66.4
Minnesota	21,965	38,638	40.7	34.8	53.8
Mississippi	19,008	32,693	36.0	29.8	68.1
Missouri	18,158	28,222	34.6	29.6	62.3
Montana	17,801	33,755	38.5	31.9	77.1
Nebraska	17,781	32,281	36.2	29.8	79.1
Nevada	24,220	44,958	44.6	37.7	59.8
New Hampshire	21,317	38,971	39.7	35.3	65.8
New Jersey	28,424	58,208	47.3	40.7	67.8
New Mexico	22,114	35,994	33.2	30.1	67.8
New York	27,441	59,116	43.1	38.1	67.9
North Carolina	20,077	38,733	25.5	17.3	54.5
North Dakota	16,624	27,371	34.0	30.3	73.9
Ohio	20,550	42,152	41.1	29.0	68.9
Oklahoma	22,157	30,445	37.5	31.1	79.6
Oregon	20,708	35,962	32.9	27.2	59.4
Pennsylvania	26,341	50,337	42.1	37.1	63.0
Rhode Island	23,423	46,016	41.3	38.3	68.9
South Carolina	20,354	41,766	31.4	24.0	67.4
South Dakota	17,895	27,617	38.2	31.3	77.7
Tennessee	21,348	34,650	32.8	31.2	61.0
Texas	19,011	32,358	32.6	30.4	73.5
Utah	18,740	34,900	35.4	34.4	42.5
Vermont	20,918	40,330	39.6	35.8	72.6
Virginia	23,098	38,328	36.1	33.6	65.2
Washington	21,441	44,892	40.4	28.1	60.7
West Virginia	21,466	36,378	33.6	29.3	72.2
Wisconsin	23,080	42,995	41.0	27.0	67.3
Wyoming	20,137	38,701	37.6	30.4	77.6

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[1] Source: National Center for Education Statistics. *America's Teachers: Profile of a Profession. 1993-94*. Table A6.2. [2] Source: National Center for Education Statistics. 1993-94 Schools and Staffing Survey, (Public School Teacher Questionnaire). Tabulations conducted by the National Commission on Teaching & America's Future. [3] Source: National Center for Education Statistics. *America's Teachers: Profile of a Profession. 1993-94*. Table A4.8.

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Table 10 – Public School Teachers' Working Conditions: Teaching Loads

	Pupil-Teacher Ratio[1]	Average Class Size[2]	Secondary Teachers[3]		
			Average # of subject areas taught	Average # of periods taught per week	Average # of students taught
U.S. Average	17.3	23.5	1.8	5.4	123.5
Alabama	17.2	23.1	1.8	5.3	124.1
Alaska	17.6	22.0	2.6	5.5	115.5
Arizona	19.3	25.5	1.8	5.4	134.1
Arkansas	17.1	21.0	1.8	5.6	115.9
California	24.0	28.8	1.9	5.2	148.5
Colorado	18.4	24.5	2.0	5.2	127.8
Connecticut	14.1	20.0	1.7	5.4	104.3
Delaware	16.6	22.9	1.7	5.7	131.2
District of Columbia	13.2	21.0	1.4	5.2	106.5
Florida	19.1	26.3	1.7	5.3	136.7
Georgia	16.3	23.1	1.8	5.1	121.8
Hawaii	17.9	22.5	1.8	5.3	117.7
Idaho	19.1	24.1	2.1	5.2	120.2
Illinois	17.3	23.4	1.9	5.3	123.7
Indiana	17.5	22.4	1.8	5.2	117.6
Iowa	15.7	21.8	1.9	5.8	120.6
Kansas	15.1	20.5	2.0	5.3	107.9
Kentucky	17.0	23.0	1.8	5.2	119.8
Louisiana	16.6	22.4	1.9	5.5	128.1
Maine	13.8	19.8	1.9	6.0	105.3
Maryland	17.0	25.6	1.7	5.2	125.4
Massachusetts	14.8	21.9	1.8	5.6	115.3
Michigan	20.1	25.5	1.9	5.1	126.4
Minnesota	17.5	25.5	1.8	5.0	128.1
Mississippi	17.5	22.6	1.5	5.1	113.3
Missouri	15.5	23.1	1.8	5.5	121.8
Montana	16.3	20.1	2.1	5.6	104.9
Nebraska	14.5	19.7	2.1	5.8	105.3
Nevada	18.7	25.9	2.0	5.5	143.4
New Hampshire	15.6	21.2	1.8	5.1	103.0
New Jersey	13.8	21.2	1.8	5.6	109.3
New Mexico	17.2	22.6	2.0	5.3	123.5
New York	15.2	22.7	1.6	5.5	123.5
North Carolina	16.2	23.1	1.7	5.2	115.0
North Dakota	15.3	20.4	2.2	5.3	104.7
Ohio	16.6	22.8	1.8	5.6	124.1
Oklahoma	15.5	21.3	2.1	5.5	109.7
Oregon	19.9	24.4	2.1	5.3	125.8
Pennsylvania	17.1	23.8	1.7	6.1	143.6
Rhode Island	14.7	21.3	1.8	5.6	114.0
South Carolina	16.4	22.0	1.7	5.1	113.7
South Dakota	14.4	21.0	2.2	5.4	109.5
Tennessee	18.6	24.7	1.8	5.0	125.0
Texas	15.7	21.9	1.7	5.2	114.9
Utah	24.3	28.1	1.9	5.7	160.2
Vermont	13.8	19.5	1.9	5.3	97.6
Virginia	14.6	21.1	1.6	4.9	102.6
Washington	20.2	26.6	2.1	5.3	131.6
West Virginia	14.8	22.5	1.9	5.6	123.8
Wisconsin	15.9	22.9	1.7	5.5	122.5
Wyoming	15.0	20.3	2.1	5.6	105.8

1 Source: National Center for Education Statistics, *America's Teachers: Profile of a Profession, 1993-94*, Table 65. 2 Source: National Center for Education Statistics, *America's Teachers Profile of a Profession, 1993-94*, Table A4.8. 3 Source: National Center for Education Statistics, *America's Teachers: Profile of a Profession, 1993-94*, Table A4.13.

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Table 11 – Professional Working Conditions:

Teacher Influence Over Classroom Decisions

	Percentage of Public School Teachers Who Report Influence over Specific Classroom Decisions				
	Textbooks	Teaching Content	Teaching Techniques	Grading	Discipline
U.S Average	55	61	86	87	69
Alabama	44	52	84	87	63
Alaska	60	68	91	90	72
Arizona	55	59	87	88	72
Arkansas	61	57	84	85	64
California	47	58	87	90	78
Colorado	71	69	91	89	75
Connecticut	55	53	80	88	77
Delaware	53	66	87	87	65
District of Columbia	53	59	84	92	61
Florida	46	57	86	87	62
Georgia	46	51	86	86	62
Hawaii	66	77	92	93	76
Idaho	58	70	89	89	74
Illinois	59	68	88	88	74
Indiana	59	69	89	90	67
Iowa	67	74	92	90	76
Kansas	64	71	88	88	75
Kentucky	66	77	82	82	62
Louisiana	41	50	85	85	66
Maine	74	73	91	90	80
Maryland	41	41	75	80	66
Massachusetts	62	63	86	86	74
Michigan	61	66	89	88	71
Minnesota	67	72	92	90	75
Mississippi	51	54	86	85	64
Missouri	64	66	89	89	67
Montana	69	72	90	88	73
Nebraska	72	74	90	90	80
Nevada	59	63	91	91	72
New Hampshire	68	68	91	89	80
New Jersey	55	55	82	88	75
New Mexico	62	70	92	87	67
New York	60	57	87	87	70
North Carolina	45	44	80	82	62
North Dakota	67	76	89	87	78
Ohio	55	56	87	88	68
Oklahoma	66	67	90	90	65
Oregon	63	71	91	88	68
Pennsylvania	57	61	89	88	68
Rhode Island	52	61	89	87	78
South Carolina	47	66	82	85	57
South Dakota	71	73	91	89	81
Tennessee	43	54	87	87	70
Texas	50	57	83	80	59
Utah	51	58	87	90	73
Vermont	85	78	91	87	76
Virginia	46	53	84	83	64
Washington	60	66	91	88	69
West Virginia	48	61	87	87	70
Wisconsin	68	72	91	91	77
Wyoming	69	73	91	89	76

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Survey (Public School Teacher Questionnaire). Tabulations conducted by the National Commission on Teaching & America's Future.

Table 12 – Professional Working Conditions:

Teacher Influence Over School Decisions

	% of Public School Teachers Who Report Influence Over Specific School Decisions						% who reported that following school rules conflicts with professional judgment
	Discipline Policies	Content of Inservice Programs	Teacher Hiring	Budget	Teacher Evaluation	Curriculum Content	
U.S. Average	35	31	8	8	3	34	24
Alabama	30	31	2	2	2	25	28
Alaska	44	34	8	8	3	36	24
Arizona	39	30	14	14	3	34	24
Arkansas	27	28	4	4	2	29	25
California	46	36	11	11	2	38	21
Colorado	48	37	29	29	5	45	22
Connecticut	33	36	7	7	3	36	25
Delaware	27	22	6	6	2	32	28
District of Columbia	30	30	2	2	3	23	40
Florida	34	34	9	9	4	31	25
Georgia	31	35	6	6	1	24	26
Hawaii	40	33	6	6	4	45	24
Idaho	43	29	8	8	2	41	20
Illinois	36	30	6	6	4	37	25
Indiana	32	31	3	3	3	37	21
Iowa	40	27	6	6	2	46	21
Kansas	41	29	8	8	3	41	17
Kentucky	40	43	17	17	2	41	23
Louisiana	35	25	4	4	3	20	27
Maine	45	41	10	10	3	45	22
Maryland	25	23	6	6	2	17	31
Massachusetts	27	21	7	7	4	34	25
Michigan	41	35	7	7	3	41	21
Minnesota	46	36	15	15	4	47	19
Mississippi	31	33	2	2	4	22	26
Missouri	30	40	4	4	2	45	24
Montana	44	36	6	6	2	53	23
Nebraska	40	24	5	5	2	46	15
Nevada	37	27	5	5	1	28	19
New Hampshire	39	33	15	15	4	52	24
New Jersey	23	23	1	1	2	33	28
New Mexico	37	28	14	14	4	38	29
New York	30	25	11	11	3	29	30
North Carolina	33	34	4	4	2	23	25
North Dakota	43	28	3	3	2	42	19
Ohio	30	32	5	5	3	32	20
Oklahoma	31	45	4	4	2	33	22
Oregon	45	30	12	12	2	46	22
Pennsylvania	32	20	2	2	1	35	26
Rhode Island	30	27	3	3	3	33	24
South Carolina	27	27	6	6	5	33	24
South Dakota	46	37	4	4	3	49	21
Tennessee	36	28	4	4	3	22	23
Texas	29	27	13	13	3	31	27
Utah	49	30	10	10	5	36	19
Vermont	56	43	18	18	5	59	25
Virginia	30	24	5	5	1	27	23
Washington	49	44	19	19	3	46	22
West Virginia	39	33	2	2	3	30	22
Wisconsin	42	36	9	9	1	49	22
Wyoming	44	29	15	15	2	49	21

Source: National Center for Education Statistics, 1993-94 Schools and Staffing Surveys (Public School Questionnaire). Tabulations conducted by the National Commission on Teaching & America's Future.

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Appendix C
NCATE, INTASC, and National Board Standards

When people seek help from doctors, lawyers, accountants, engineers, or architects, they rely on the unseen work of a three-legged stool supporting professional competence: accreditation, licensing, and certification. In most professions, candidates must graduate from an accredited professional school that provides up-to-date knowledge and effective training in order to sit for the state licensing examinatons that test whether they have learned what they need to know to be responsible practitioners. In addition, many professions offer examinations that recognize advanced levels of skill, such as board certification for doctors, public accountants, and architects. Those who meet these standards are then allowed to do certain kinds of work that others cannot. The standards are also used to improve professional education and to set standards of practice for the work of the profession.

Until recently, teaching has not had a coherent set of standards created by the profession to guide education, entry into the field, and ongoing practice. In the last ten years, such standards have been created by three bodies working together to improve teaching: the National Council for the Accreditation of Teacher Education (NCATE) which sets standards for schools of education, the Interstate New Teacher Assessment and Support Consortium (INTASC)—a group of more than 30 states working to develop standards for the licensing of beginning teachers—and the National Board for Professional Teaching Standards, which sets standards for accomplished practice and offers advanced certificates. These standards are aligned with one another and with new standards for student learning in the disciplines, and they are tied to performance-based assessments of teacher knowledge and skill. The assessments look at evidence of teaching ability (videotapes of teaching, lesson plans, student work, analyses of curriculum) in the context of real teaching. States are just beginning to incorporate these standards into their policies governing teaching.

What do the standards require? To be accredited by NCATE, a teacher education program must:

- offer a coherent program of studies based on a knowledge base about effective teaching, rather than a collection of courses based on what professors want to teach;
- provide a full foundation in the liberal arts and in the discipline to be taught;
- prepare candidates to teach children so that they can achieve student learning standards in the disciplines;
- prepare teachers who can work with diverse learners and with new technologies;
- ensure that candidates gain knowledge of effective learning and teaching strategies as described in the INTASC standards and demonstrate their skills in working with students.

The INTASC standards for teacher licensing further spell out the competencies beginning teachers should have. These include:

- knowledge of subject matter and how to teach it to students;
- understanding of how to foster learning and development and how to address special learning needs;
- ability to assess students, plan curriculum, and use a range of teaching strategies that develop high levels of student performance;
- ability to create a positive, purposeful learning environment;
- ability to collaborate with parents and colleagues to support student learning and to evaluate the effects of one's own teaching in order to continually improve it.

The National Board standards for accomplished practice are used to guide assessments of veteran teachers. They outline detailed standards in 30 areas defined by subject area and developmental level of students (e.g. Early Adolescence Mathematics). The standards reflect these 5 propositions:

- Teachers are committed to students and their learning. National Board-Certified teachers are dedicated to ensuring their students' success. They understand how students develop and learn, and they adjust their practice based on student needs.
- Teachers know the subjects they teach and how to teach those subjects to students. Teachers use their deep understanding of subject matter to make it accessible to students.
- Teachers are responsible for managing and monitoring student learning. Teachers use their range of instructional techniques when each is appropriate. They know how to motivate and engage students, assess their learning, and explain student performance to parents.
- Teachers think systematically about their practice and learn from experience. National Board-Certified teachers critically examine their practice, seek advice from others, and use research to improve their teaching.
- Teachers are members of learning communities. They work collaboratively with parents and other professionals on behalf of students.

Meeting the INTASC and National Board standards requires both written assessments of subject matter and teaching knowledge and performance assessments of actual teaching in the classroom, including the development of a portfolio of lesson plans, student work, videotapes of teaching, and analyses of teaching decisions. The process is itself educational. As Shirley Bzdewka of Dayton, New Jersey described the effect of pursuing Board certification:

I'm a very different teacher now. I am much more focused. I can never, ever do anything again with my kids and not ask myself, "Why am I doing this? What are the effects on my kids? What are the benefits to my kids? It's not that I didn't care about those things before, but it's on such a conscious level now."

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